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Regression Analysis v. Ratios in the Cross-section Analysis of Financial Statements

R. H. Berry and S. Nix*

Abstract—The assumption that the calculation of a ratio generates a useful number is widespread among analysts. The recent literature on financial statement analysis has highlighted this assumption and raised doubts about its validity on both theoretical and empirical grounds. This paper aims both to summarise and extend this discussion. An examination of the literature is followed by empirical work based around UK data on the brewing industry. A concluding section assesses the relevance of this strand of research for the practice of financial statement analysis.

The theoretical literature

Lev and Sunder (1979) and Whittington (1980), in the course of their wider ranging critiques of the practice of ratio analysis, argue that the major justification for the use of the ratio form is the removal of the influence of firm size on the numerator variable and that the tool is not up to the task. Their basic argument can be explained by reference to Figure 1, which shows the recorded accounting figures for two variables X and Y for three firms A, B and C in a given industry for a specific year. The level of variable Y for each firm is assumed to be deterministically set by the level of variable X. The ratios (Y/X), shown by the dotted rays passing through the origin, differ significantly for each firm. This occurs not because of any efficiency differences, which have of course been assumed away, but because the ratio form has not adequately removed the size effect due to X. This size effect takes the form:

$$Y_i = \alpha + \beta X_i. \tag{1}$$

Taking ratios gives:

$$(Y_i/X_i) = (\alpha/X_i) + \beta. \tag{2}$$

The larger the firm, as measured by X, the lower is the ratio, since (α/X_i) falls as X increases. Both Lev and Sunder and Whittington advocate a regression rather than a ratio approach to deal with the size effect in financial variables.

Barnes (1982) uses the size effect to explain the often reported non-normality of distributions of ratios. Deakin (1976), Frecka and Hopwood (1983), Bougen and Drury (1980), and Ezzamel et al. (1987) are examples of this continuing stream of research. Barnes argues, in the same vein as Lev and Sunder, that the ratio is an appropriate numerical summary only if, for the firms in the sample under investigation, the variables X and Y behave according to the following relationship:

$$Y_i = \beta X_i + u_i, \tag{3}$$

where $u_i \sim N(0, \sigma^2 X_i^2)$.
Taking ratios generates:

$$(Y_i/X_i) = (u_i/X_i) + \beta, \tag{4}$$

where $(u_i/X_i) \sim N(0, \sigma^2)$.

In this situation, where heteroscedasticity of that particular degree is present and the basic equation is strictly proportional, taking ratios removes the scale factor from the firms' performance measure exactly. Barnes argues that, if the behaviour of the sample of firms conforms instead to the more general linear model where, because of the presence of α, ratio based comparisons would be inappropriate, i.e.:

$$Y_i = \alpha + \beta X_i + u_i, \tag{5}$$

then taking ratios gives:

$$(Y_i/X_i) = (\alpha/X_i) + \beta + (u_i/X_i), \tag{6}$$

and (α/X_i) imparts a degree of skewness to the distribution of the ratio. The idea is given clearer expression in Lee (1985). Both Barnes and Lee argue for the use of regression as a method of removing the influence of scale on financial variables.

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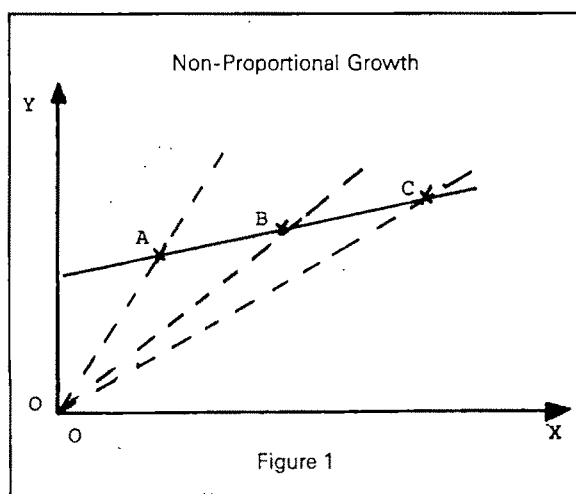
Figure 1

Non-Proportional Growth

Table 1
Ratio Definitions

CA/SAL	Current Assets to Sales*
CA/CL	Current Assets to Current Liabilities*
CF/TD	Cash Flow to Total Debt*
TD/TA	Total Debt to Total Assets*
QA/NI	Quick Assets to Net Sales
NI/NS	Net Income to Net Sales

This literature represents an explicit challenge to the adequacy of the ratio form for the purpose of removing the size effect from a financial variable and provides support for the use of regression analysis. The regression analysis approach would estimate typical performance for a firm of given size X_i by:

$$\hat{Y}_i = \hat{\alpha} + \hat{\beta}X_i, \qquad (7)$$

and the extent to which a firm differs from typical performance by the regression residual:

$$e_i = (Y_i - \hat{Y}_i). \qquad (8)$$

The regression approach can handle a much wider range of functional forms and a larger number of explanatory variables. It can of course also cope with the situation in which the conceptually simpler ratio approach will also work.

This critique of the value of the ratio form has not gone unchallenged. Horrigan (1983), in a response to Barnes, leapt to the defence of the ratio. His argument is basically that ratios, rather than the component parts, are the variables of interest and that their ability/inability to cope with the effect of scale is of secondary importance. However, he is less than convincing. For example he states (p. 684):

> Regular accounting data do suffer from a size effect, of course, because they are cardinal numbers. ... So, even if financial ratios did not exist they would have to be arbitrarily created to get round the size problem inherent in regular accounting data.

Horrigan is trapped within the confines of traditional analysis. *Something* would have to be created to cope with the scale effect, indeed has to be created according to Lev and Sunder, Whittington, and Barnes, but that something is not necessarily a ratio.

Horrigan later acknowledges the possibility that ratios will not, under all circumstances, cope with

scale effects. However, he also questions the ability of regression analysis to cope. His particular concern appears to be the possibility of the presence of heteroscedasticity in the error term. Barnes (1983) is clearly little moved by Horrigan's arguments. One is left with the *a priori* belief that ratios will fail to control for size in some circumstances and that the key issue is how widespread these circumstances are in the real world.

The empirical literature

Available empirical literature dealing with the size effect is limited. Whittington (1980) uses a UK inter-industry sample to examine the appropriateness of profitability ratios. He finds evidence that a strictly proportional relationship between numerator and denominator variables does not exist. However, he finds evidence to support the validity of a quadratic relationship rather than a linear form including an intercept. The implication of these findings is again that the ratio form is not an appropriate tool for taking into account the scale effect.

A more substantial study is that reported by McDonald and Morris (1984, 1985). These two papers apply different statistical approaches to the same data sets. The conclusions are essentially the same. Therefore the 1984 paper only will be discussed here. Two US data sets are analysed, an inter-industry sample and a single industry sample. The variable pairs involved in the four ratios shown in Table 1, and marked with a *, are analysed for one year only.

Using ordinary least squares, McDonald and Morris estimate the four models listed in Table 2 for each of these pairs of variables. The numerator variable in Table 1 is chosen as the dependent (Y) variable in all cases. The labels OLS, PRO, OLS-A, and PRO-A are those used by McDonald and Morris. They report coefficient values, t statistics,

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Table 2
McDonald and Morris's Models

OLS	$Y_i = \beta X_i + u_i$	$u_i \sim N(0, \sigma^2)$
PRO	$Y_i = \beta X_i + u_i$	$u_i \sim N(0, \sigma^2 X_i^2)$
OLS-A	$Y_i = \alpha + \beta X_i + u_i$	$u_i \sim N(0, \sigma^2)$
PRO-A	$Y_i = \alpha + \beta X_i + u_i$	$u_i \sim N(0, \sigma^2 X_i^2)$

the Goldfeld–Quandt Q measure for heteroscedasticity and Fisher's standardised estimates for skewness and kurtosis.

The estimation process for the PRO and PRO-A models consists of transforming the equations by dividing through by X_i, thereby, it is hoped, stabilising the variance of the error term, and then using ordinary least squares.

For the inter-industry sample, for CA = f(SAL) and for CA = f(CL), the most appropriate functional form appears to be PRO-A. Heteroscedasticity and non-normality are less significant than for any of the other three functional forms. A statistically significant intercept appears in both cases. However, the regression residuals exhibit some remaining non-normality and therefore t tests are not exactly appropriate. For CF = f(TD) the superiority of the PRO-A form over the PRO form is not so clear cut. For TD = f(TA) there appears to be no evidence of a statistically significant intercept. For these latter two cases the distribution of the error term in the PRO form is not brought closer to normality by the transformation involved. Somewhat surprisingly McDonald and Morris conclude that (p. 94):

> ... the intercept term is not statistically significant across the ratios studied.

Overall they are dismissive of the relevance of the analysis of their inter-industry sample.

For the single industry sample there is no evidence of a non-zero intercept for any of the four pairs of variables examined. The PRO form is clearly superior to the OLS form in terms of distributional statistics. McDonald and Morris therefore conclude that the continued use of the ratio form for the purpose of financial statement analysis is justified. Barnes (1986) argues that McDonald and Morris are unduly supportive of the ratio form because of their emphasis on the non-normal distributional form of the residuals and the difficulties implied for regression analysis. He argues correctly that the key issue is the significance of the intercept terms in the regression results. McDonald and Morris (1986) agree that this is a key issue, but respond that their empirical results provide no evidence for the presence of significant intercepts.

Lee (1985) also offers a block of relevant empirical evidence. He uses models of the same form as McDonald and Morris's PRO, PRO-A and OLS-A, and also a simple multivariate model. These models are fitted to ten samples of data each of which is drawn from a different industry. Data is collected on each of five years. The variables involved are those used in the ratios in Table 1 with the exception of CA/SAL.

Lee reports his results in summary form only. In terms of normality and homoscedasticity the OLS-A form was found to perform less well than the PRO form, the PRO form less well than the PRO-A form, and the PRO-A form less well than the multivariate model. However, even with the best model form, normality and homoscedasticity were not uniformly achieved for all years, industries and pairs of variables. Overall his results do seem to cast doubt on the general appropriateness of the ratio form as a means of size control.

Further empirical work is reported in McLeay and Fieldsend (1987) and Fieldsend et al. (1987). The statistical approaches adopted in these papers do not lend themselves to easy description within the framework adopted by other contributors to this debate. Indeed the McLeay and Fieldsend paper explicitly states in its title that it is 'an indirect test'. However, the results are interpreted by the authors in the terms of the current debate; both industry and size effects are seen as important in explaining ratio behaviour. In other words the ratio form does not adequately control for the effect of corporate size on the numerator variable.

The paper by Fieldsend et al. examines an inter-industry sample and uses a multivariate approach to allow for separate identification of industry and firm size effects. The pair of variables CA and CL is the only one analysed. The specified model uses the logarithms of the financial variables and is estimated for each of five years. In a further departure from the typical research approach to this topic the authors report no tests of the form of the error term; well behaved error terms are assumed to exist. The authors conclude from their analysis that on an inter-industry basis there are substantial departures from the ratio form, but that these are largely removed when the extent of non-proportionality is allowed to vary between sectors. The authors identify a size effect as also being present.

Overall then there is a question mark hanging over the validity of the ratio form as a means of size control. Theoretical arguments and indirect statistical evidence are against it, but the empirical studies most clearly directed at the issue, those by McDonald and Morris, are presented as supporting the continued use of the ratio form.

The generality of the McDonald and Morris conclusions

The McDonald and Morris papers directly address the importance of the proportionality assumption in ratio analysis. However, their conclusion, that the ratio form is appropriate for financial statement analysis, is too strongly stated. Their work deals with one industry, one year, and a small number of ratios. Questions which remain to be answered are:

(a) Will the findings generalise to other industries?
(b) Will the findings be stable across time?
(c) Will the findings hold for other ratios?

Without a positive answer to each of these questions analysts would do better to adopt an approach to financial statement analysis which can identify the presence of, and cope with, a wider range of circumstances than those adequately dealt with by the ratio form.

The remainder of this paper attempts to answer these questions and argues that regression is an appropriate analytical approach.

Data set and methodology

Data was taken from Microexstat, a corporate financial database supplied by Extel Financial Ltd, which contains financial information on over 2500 UK companies in more than 50 industrial classifications. It is regularly and frequently updated. For this analysis one particular industrial sector, brewing, was selected. This is a reasonably homogeneous industry with a sufficiently large number of firms to support the statistical analysis. Not all the companies identified on Microexstat were used in the analysis. Where both parent and subsidiary were present only the subsidiary was included.

The Microexstat database contains approximately 45 brewing companies. However, the UK brewing industry as a whole, as defined by the Brewing Society, contains 66 registered brewing companies, 117 operating breweries, 90 wholesale breweries, and 70 public houses that do their own brewing. Thus the sample eventually used for analysis, 37 firms, is far from the complete population. The smaller operations, which do not feature in the Microexstat data base, have tended to be excluded. This means that it will be correspondingly more difficult to demonstrate the existence of a size effect, if one exists, since one size extreme has been excluded from consideration.

Four consecutive years of data on the brewing industry were extracted from Microexstat so that stability of results could be examined. It would have been more desirable to take data at, say, five-year intervals but the run of data in Microexstat does not support this approach. This restriction on the data being analysed makes it more difficult to find evidence of any variation in the results of the analysis due to the passage of time.

It was decided to examine the four ratios chosen by McDonald and Morris and to add a fifth, the ratio of stock to sales. It was felt that if there was to be a departure from proportionality the relationship between stock and sales was likely to exhibit it.

The statistical analysis adopted the following approach. Firstly, for each pair of variables usually linked by a ratio a regression of the form:

$$Y_i = \alpha + \beta X_i + u_i \qquad (9)$$

was estimated on cross-section data for each available year. The ratio's numerator variable was taken as the dependent variable. This is equivalent to the OLS-A form of McDonald and Morris. The regression residuals were then examined to see if there was evidence that the usual assumptions about the error term were not being met. Because of the need to make use of t tests to comment on the significance of the intercept term tests for normality were also made. A first stage of residual examination involved plotting of standardised residuals against explanatory variable values and examination by eye. Park–Glejser type tests for heteroscedasticity, as described in Rubinfeld and Pindyck (1981), were also carried out. Normality was tested by the Shapiro–Wilk W statistic.

The use of the Park-Glejser test contrasts with the more usual adoption of the Goldfeld–Quandt test. The test involves regressing the logarithm of the squares of the regression residuals on the logarithm of the explanatory variable. A significant slope coefficient in this regression indicates the presence of heteroscedasticity. Multiplying the original regression equation by the reciprocal of the explanatory variable raised to the power, slope coefficient divided by 2, should stabilise the variance of the error term. The reasoning behind the choice of this test is simple: it is easy to perform and understand and crucially gives an indication not only of the presence of heteroscedasticity but also of the power of the transformation needed to remove it. The test is flawed but its potential informativeness is appealing.

The use of the Shapiro–Wilk W statistic is increasingly recommended as a superior omnibus test for normality (see, for example, Maddala, 1979). The Shapiro–Wilk statistic is linked to the probability plot approach to testing normality. In a probability plot the observations are ordered and then regressed against the expected values of the standard normal order statistics. A departure from linearity indicates non-normality. The W statistic is proportional to the square of the regression slope divided by the dependent variable sum of squared deviations. This is approximately the ratio of two variance estimates which are equal under the assumption of normality. A departure from normality is associated with a small value of W. Shapiro and Wilk (1965) remark on the test's especial sensitivity to asymmetry. Maddala (1979) comments on the test's general superiority to the combination of $\sqrt{b_1}$ and b_2 used by McDonald and Morris. There is therefore no reason to believe that the test is less able to detect skewness than the $\sqrt{b_1}$ used elsewhere. Obviously, however, an omnibus test of normality does not indicate the reason why, skewness or otherwise, the hypothesis of normality is being rejected.

Published computer programs are available in Royston (1982) to allow the calculation of W and

its significance level for any sample size between 3 and 2000. If at the end of the first-stage regressions the residuals are satisfactory then the significance tests on the intercept terms can be taken seriously.

Next a regression of the form:

$$(Y_i/X_i) = (\alpha/X_i) + \beta + (u_i/X_i) \qquad (10)$$

was run. This is the PRO-A model of McDonald and Morris. It is also a logical next regression to try if the initial regressions indicate the presence of heteroscedasticity but give no further information about its extent. Once again for each regression, residuals analysis of the form described above was carried out. If a lack of heteroscedasticity and the presence of normality are evident in these residuals then significance tests on the intercept term can be reasonably performed.

The pattern of analysis is similar to that likely to be followed by any analyst seeking to make use of the regression approach in an actual cross-section analysis activity. It is a more exploratory use of regression than is normally described in standard texts. It proceeds by trial and error, with residuals analysis as the crucial guide to whether or not the functional form being used is satisfactory. In a complete analysis a more general functional form might be estimated first and examined. Amendment would then be made as indicated by the residuals analysis. When an acceptable functional form is found then the final set of residuals represents firm specific differences from the industry norm.

A subsidiary analysis was then carried out on the variables Stock and Sales, the pairing where non-ratio behaviour seemed most evident from the empirical results already obtained. This was the pairing where evidence of significant intercept terms was found. An equation of the form:

$$Y = e^{\alpha} X^{\beta} e^{u} \qquad (11)$$

was analysed. The reason for including this analysis was to cover the possibility of a log-normal error term being present in the data. Here the appropriateness of the ratio form is indicated by an estimated β having a value of 1. The estimated equation was:

$$\ln(Y_i) = \alpha + \beta \ln(X_i) + u_i, \qquad (12)$$

where ln indicates natural logs. Residuals analysis was carried out as usual. Again the object of the exercise was to justify the carrying out of hypothesis tests on coefficient values.

A final stage of the analysis identified the ranking of firms in terms of size of residuals for which any of the regression equations estimated were satisfactory and there was a statistically significant non-zero intercept. The PRO-A model tended to outperform the OLS-A model and hence provided the basis for this stage of the analysis. These rankings were compared with those based on traditional ratios. The comparison was based on both graph plots and the Spearman Rank Correlation Coefficient. The aim of this final stage of the analysis was to get an indication of whether the more sophisticated regression approach, even where appropriate, was likely to make a difference to any practitioner. If the rankings were similar there would be no additional information in the outputs of the more sophisticated analysis to make a difference in any decision process. This of course neglects the point that carrying out the more appropriate analysis might well have generated greater understanding of what was going on in the industry being examined.

Regression results

The first-stage results relate to the fit of the equation:

$$Y_i = \alpha + \beta X_i + u_i, \qquad (13)$$

where $u_i \sim N(0, \sigma^2)$.

These results are shown in Table 3. The table shows, for each variable pair and year, the intercept (α) and slope (β) with their associated t statistics, slope coefficient in the heteroscedasticity test equation and its associated t statistic, and finally the Shapiro–Wilk W statistic.

A glance at the reported results seems to indicate that the intercept terms are not significantly different from zero and that therefore a strictly proportional form consistent with normal ratio analysis is appropriate. However, this analysis is premature since the usual assumptions about the error term in the regression equation are not met. Heteroscedasticity and non-normal error terms are the rule for all variable pairings and for all years. The extent of heteroscedasticity is given by the size of the tabulated coefficient. For the PRO-A model to be appropriate these coefficients should be of the order of 2. This value, as explained in the description of the Park–Glejser test given earlier, would indicate that the transformation involved in moving to the PRO-A model would be appropriate. As can be seen they are in general rather lower than this and hence the transformation involved in the PRO-A model may overcompensate for the presence of heteroscedasticity. However, some transformation is clearly needed.

Table 4 reports the corresponding output for the PRO-A model. There is clearly an improvement in the form of the error term. Heteroscedasticity has been removed by and large. The relationship between cash flow and total debt provides the only exceptions. Also the W statistic has improved substantially. However, normality can still be rejected in the majority of cases. Thus although there

Table 3
Model OLS-A Results

Ratio	Year	Alpha/t	Beta/t	Hetero/t	W Norm.
STK/SAL	1	0.2739	0.1147	1.230	0.5146
		(0.290)	(40.620)	(2.848)	
	2	0.5436	0.1050	1.553	0.5075
		(0.319)	(23.869)	(5.983)	
	3	0.5203	0.1081	1.558	0.5323
		(0.259)	(22.698)	(5.297)	
	4	0.4900	0.1043	1.769	0.5850
		(0.212)	(21.445)	(6.761)	
CF/TD	1	1.6890	0.6555	0.8935	0.6291
		(1.243)	(28.904)	(4.570)	
	2	2.3450	0.5913	0.8810	0.7435
		(1.436)	(27.038)	(4.877)	
	3	2.2368	0.6178	1.1399	0.6059
		(0.858)	(19.114)	(5.919)	
	4	3.2486	0.5571	0.6361	0.4971
		(0.765)	(13.411)	(2.179)	
TD/TA	1	−1.1451	0.1695	1.587	0.5467
		(−0.529)	(27.364)	(6.118)	
	2	−2.2930	0.1825	1.268	0.7251
		(−1.100)	(35.825)	(6.545)	
	3	−1.2305	0.1764	1.957	0.6406
		(−0.417)	(26.937)	(8.07)	
	4	−1.5913	0.1982	1.947	0.6452
		(−0.363)	(22.782)	(8.614)	
CA/CL	1	1.0681	1.1228	1.588	0.5806
		(0.650)	(40.545)	(5.112)	
	2	0.9805	1.3028	1.468	0.4843
		(0.374)	(35.654)	(8.236)	
	3	0.5657	1.2854	1.931	0.6478
		(0.175)	(33.878)	(6.612)	
	4	1.6052	1.3320	0.8822	0.5416
		(0.421)	(32.303)	(2.423)	
CA/SAL	1	1.8139	0.2318	1.217	0.5465
		(1.055)	(44.997)	(3.775)	
	2	3.3931	0.2380	1.253	0.6116
		(1.060)	(28.750)	(6.301)	
	3	3.6878	0.2541	1.315	0.5572
		(0.784)	(22.743)	(7.686)	
	4	5.1417	0.2526	1.278	0.5404
		(0.892)	(20.728)	(5.775)	

are now several intercepts significantly different from zero in the results, for example for the variable pair cash flow and total debt, the continuing problems with the form of the residuals indicate that hypothesis tests must still be treated with suspicion.

The pairing of Stock and Sales however provides an exception. The intercept terms appear significantly different from zero, heteroscedasticity has been removed, and the W statistics have dramatically improved, to the extent that normality cannot be rejected in years 1 and 4. There is thus a clear indication that the pure ratio form may be inappropriate for this variable pairing in years 1 and 4.

Table 5 contains the results of estimating the relationship between Stock and Sales in logarithmic form.

With this particular function form proportionality is indicated by a β of 1. This hypothesis can be rejected in every year except the fourth. The test must however be viewed with caution since once again there are problems with the residuals. Normality is absent in year 4 and heteroscedasticity remains a problem in year 1. However, years 2 and 3 clearly indicate non-proportionality.

Table 4
Model PRO-A Results

Ratio	Year	Alpha/t	Beta/t	Hetero/t	W Norm
STK/SAL	1	−0.3032 (−3.850)	0.1147 (18.723)	−0.166 (−0.046)	0.9516
	2	−0.2553 (−2.248)	0.1098 (14.023)	−0.086 (−0.416)	0.8621
	3	−0.3741 (−3.368)	0.1149 (16.321)	−0.299 (−1.380)	0.8836
	4	−0.2950 (−2.101)	0.1059 (12.575)	−0.337 (−1.194)	0.9461
CF/TD	1	1.0629 (3.319)	1.0541 (3.192)	0.3736 (2.329)	0.5745
	2	1.1940 (2.920)	1.0020 (2.724)	0.2841 (1.802)	0.5693
	3	0.9547 (1.942)	0.9079 (4.096)	0.8044 (4.142)	0.7896
	4	1.2390 (5.950)	0.7494 (4.583)	0.0891 (0.341)	0.7299
TD/TA	1	−0.2267 (−0.799)	0.1264 (6.942)	−0.380 (−1.167)	0.9083
	2	−0.1890 (−0.656)	0.1268 (7.619)	−0.237 (−0.868)	0.9380
	3	−0.3584 (−1.165)	0.1394 (8.757)	−0.026 (−0.113)	0.9476
	4	−0.7800 (−1.798)	0.1760 (9.102)	0.1835 (0.5636)	0.9335
CA/CL	1	0.4187 (1.768)	1.1228 (12.313)	0.2993 (1.480)	0.9804
	2	0.6297 (2.038)	1.2450 (11.176)	0.4117 (1.404)	0.8456
	3	0.1199 (0.4096)	1.2700 (13.440)	−0.1008 (−0.3633)	0.9431
	4	0.2459 (0.6630)	1.3530 (11.950)	0.4085 (1.537)	0.9128
CA/SAL	1	0.1902 (0.781)	0.2454 (12.946)	0.4192 (1.386)	0.9200
	2	0.2799 (0.831)	0.2613 (11.257)	−0.0565 (−0.172)	0.8261
	3	0.1393 (0.333)	0.0266 (10.100)	0.0601 (0.2766)	0.7620
	4	0.1746 (3.495)	0.2799 (9.343)	0.3369 (1.329	0.8266

Table 5
Logarithmic Model Results

Ratio	Year	Alpha/t	Beta/t	Hetero/t	W Norm
STK/SAL	1	−2.883 (−18.95)	1.146 (27.706)	−0.0515 (−2.034)	0.9742
	2	−2.746 (−17.35)	1.098 (26.720)	−0.305 (−1.262)	0.9627
	3	−2.786 (−18.48)	1.111 (28.940)	−0.0125 (−0.549)	0.9895
	4	−2.735 (−11.24)	1.071 (17.666)	0.0127 (0.292)	0.8343

The overall conclusion of this section is that, for the pairs of variables selected by McDonald and Morris, their conclusions are neither comprehensively rejected nor confirmed. As can be seen in Table 4, the particular transformation applied does not smooth the residuals sufficiently for hypothesis testing to be unambiguously valid in many cases. For these variable pairs there is no evidence of non-zero intercepts. However, the additional variable pairing of stock and sales in general strongly suggests the absence of proportionality. In two years a linear relationship with a significantly non-zero intercept is the best fit model, and in the other two a logarithmic relationship with a slope coefficient significantly different from 1 is best. McDonald and Morris's overall conclusion can therefore be rejected. Ratio analysis is not a generally appropriate analytical process.

Ranking results

The regression analysis identified only one case where the strictly proportional assumption of ratio analysis could clearly be rejected, the stock and sales combination. This then is the only case in which the regression approach may provide different information to ratio analysis. In order to see whether or not there is potentially different information, companies were ranked in terms of their regression residuals (based on the PRO-A model) and in terms of their ratios. For each of the four years under consideration a Spearman Rank Correlation coefficient was calculated. These are given in Table 6. These values show strong links between the rankings of companies produced by the two approaches.

However, summary statistics such as these can mask substantial ranking differences for a few companies. To explore this possibility graphs of these rankings have been examined. These are included in the Appendix. Perfect agreement in rankings would generate a graph with all observations lying on the plotted 45 degree line. The further away a plotted point is from this line, the greater is the disparity between the rankings. The identity of the company, using a number code, can be read off either axis. As can be seen the Spearman coefficients are consistent with some large ranking differences. In certain circumstances these ranking differences could have a significant impact on decision making.

Table 6 Rank Correlations	
Year 1	0.858
Year 2	0.917
Year 3	0.835
Year 4	0.904

Conclusions

This study offers little support for the findings of McDonald and Morris. Their analytical approach did not generate similar results for another industry for the ratios they examined. The analysis of the additional variable pairing stock and sales clearly contradicts their general conclusion. It does appear that there are variables commonly combined as ratios where that is inappropriate. This implies that the choice of the ratio form for analysis purposes should ideally follow from the initial stages of an analysis rather than be the basis of these initial stages. Nor does the present analysis indicate that there is an alternative, generally appropriate simple model. Neither PRO-A nor a logarithmic form of model is uniformly successful. For the variable pairing stock and sales, different models proved best in different years. An assumption-free, exploratory method of analysis is therefore desirable. One such approach is of course the exploratory use of regression described in this paper. A general equation form should be developed, residuals checked, and transformations undertaken where necessary, until a satisfactory residuals set allows hypothesis testing and ranking. Another approach recommended by Ezzamel and Mar-Molinero (1988) uses the ideas of Exploratory Data Analysis developed by Tukey (1977).

The initial stages of an analysis do not of course have to be statistical in nature. It was *a priori* consideration of the likely form of the relationship which led to the inclusion of the stock and sales pairing in this analysis. In general the relationship between an individual asset item and an activity variable seems more likely to exhibit non-proportional growth than other pairings. If the asset items are aggregated compensating changes may mask the effect. This may explain the current asset to sales results in this paper.

For some pairs of variables the use of regression to identify an alternative relationship is clearly inappropriate since no unidirectional causal link is involved. The variable pair, current assets and current liabilities, is a case in point. This could just as easily and almost as informatively be expressed as a difference, if all that is required is an indication that assets exceed liabilities. There are of course links between the two variables but they are produced by a set of simultaneous equations not a simple behavioural relationship.

This simultaneity is of course also an issue in any application of regression to financial variables. Do sales cause stock to be held or does the presence of stock allow sales to occur? There is no simple cause and effect relationship. In this paper the variable normally selected as the numerator in a ratio was identified as the dependent variable in the regression analysis. This was a relatively arbitrary decision. A more complete specification of a

corporate model and the application of systems estimation methods might be the best way to proceed.

All this, however, is much removed from the needs of practitioners. Ratio calculation and use is simple. Regression analysis is more complex. Residuals analysis, especially for small samples, is very much an art rather than a science. Is there anything closer to ratio analysis which can be put in its place? In some cases practitioners seem to have already made the jump. Ratio analysis is applied but comparison is not with a single target value but with a range of target values selected according to the size of the firm being considered. So the ratio STK/SAL for a given firm would not be compared to an industry average but to an average of small firms in the industry, or medium or large firms, whichever was relevant. This approach is current in at least one major UK bank and has been for some years.

Use of this approach by practitioners is probably evidence enough that the simple ratio approach is inappropriate. Papers like this one and the rest of the literature are doing nothing more than scientifically confirming the 'gut feel' of experienced practitioners.

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Appendix

Figure A1
**Stock v. Sales—Comparison of Rankings between Transformed
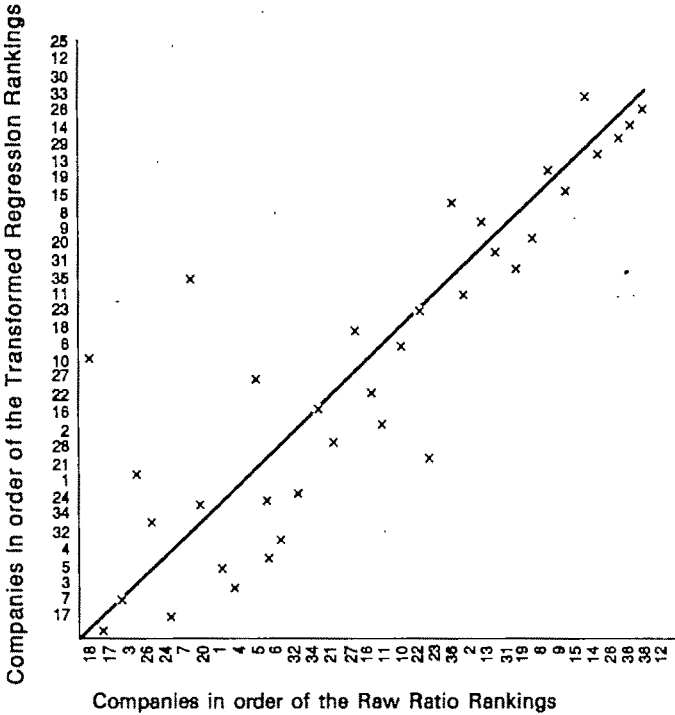Regression and Raw Ratios—Year Three**

Companies in order of the Raw Ratio Rankings

Figure A2
**Stock v. Sales—Comparison of Rankings between Transformed
Regression and Raw Ratios—Year Two**
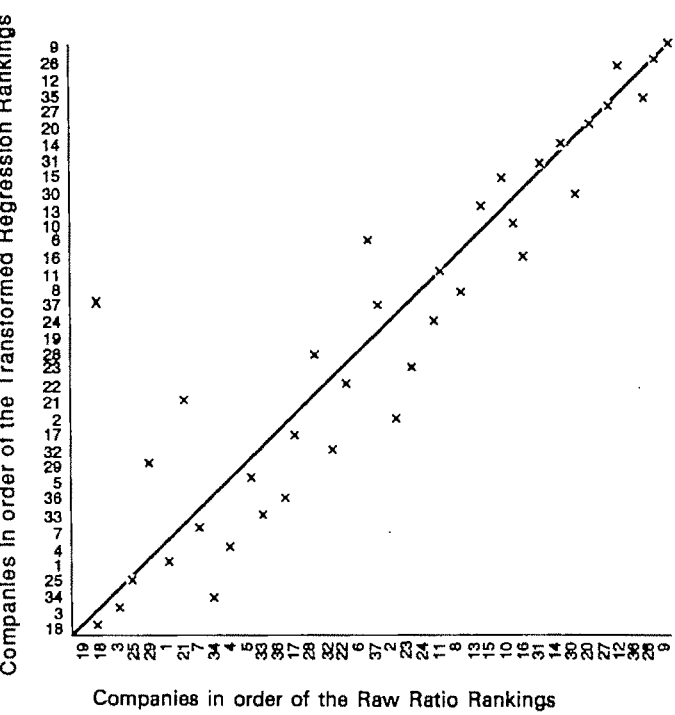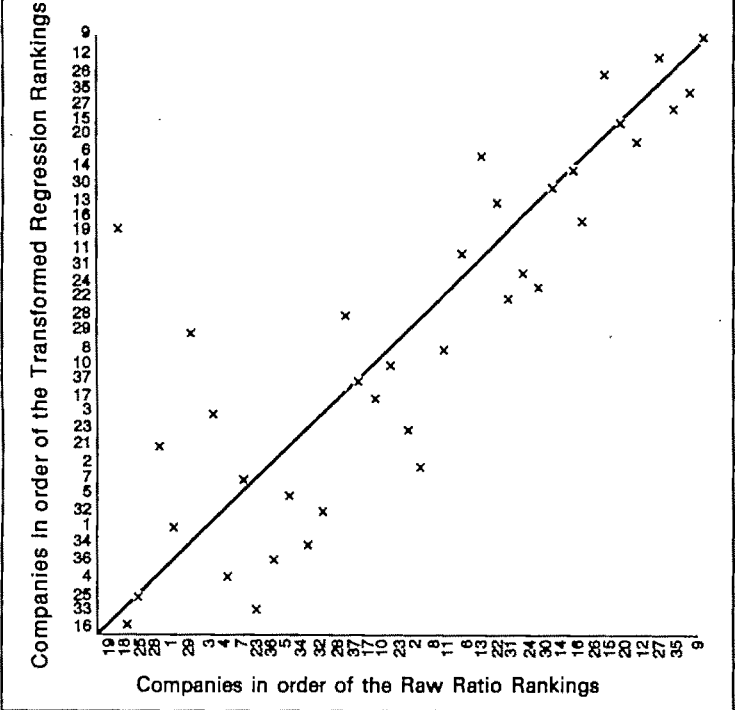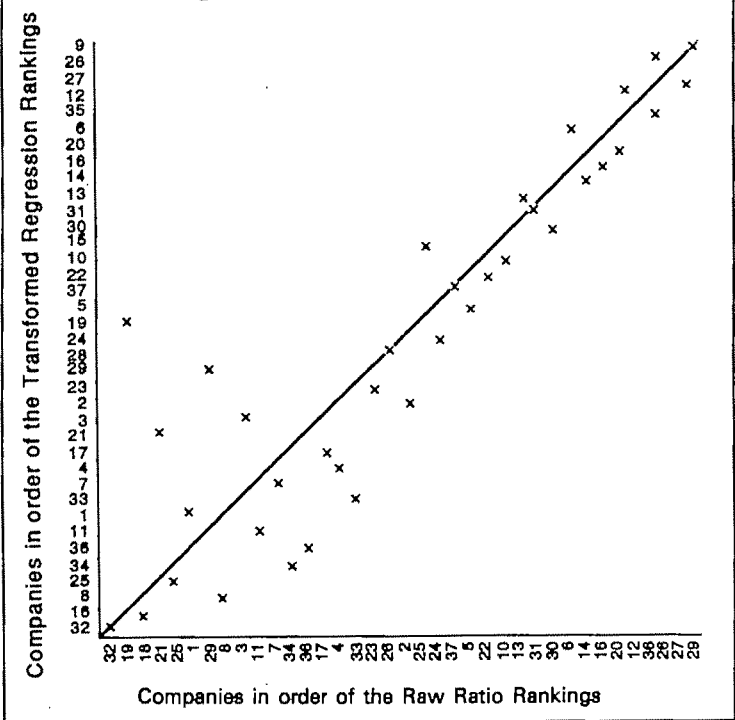

Companies in order of the Raw Ratio Rankings

Figure A3
Stock v. Sales—Comparison of Rankings between
Transformed Regression and Raw Ratios—Year Four

Figure A4
Stock v. Sales—Comparison of Rankings between
Transformed Regression and Raw Ratios—Year One

THE ACCOUNTING REVIEW

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Fritz Schmidt, Henry Sweeney and Stabilised Accounting

O. Finley Graves*

Abstract—Dean and Clarke (1989) argue that the German *Betriebswirtschaft* theorist Fritz Schmidt, who was the author of the first comprehensive replacement cost model in the literature, had a greater influence on the development of Henry Sweeney's stabilised accounting ideas than the price-level-adjustment proponents, Eugen Schmalenbach and Walter Mahlberg. This paper argues that to identify Sweeney's stabilisation ideas with Schmidt's—even those incorporating replacement costs—is misleading. Sweeney's economic orientation was fundamentally different from Schmidt's and for this reason Sweeney never fully accepted Schmidt's model. Sweeney's and Schmidt's differing economic orientations reflect national attitudinal differences that have manifested themselves in more recent inflation accounting developments.

Introduction

Dean and Clarke (1989) and Clarke and Dean (1989) have recently argued that the German *Betriebswirtschaft* theorist Fritz Schmidt, who was the author of the first comprehensive replacement cost model in the literature (1921), had a greater influence on the development of Henry Sweeney's stabilised accounting ideas than the price-level-adjustment proponents, Eugen Schmalenbach and Walter Mahlberg. Citing a number of references to Schmidt in Sweeney's writings, they contend that '[t]hese points link Sweeney's ideas, and certainly his preferred mode of stabilized accounting, more with Schmidt than with any of the other *Betriebswirtschaftslehre* theorists' (Dean and Clarke, 1989, p. 105). And in a reference to an earlier article by Graves (1987), who had closely identified Sweeney's price-level-adjustment model with the gold-mark models of Mahlberg and Schmalenbach, they argue that

> [c]onsidering only the links with the *Goldmark-bilanz* proposals precludes identification of the extent of the influence the work of the leading replacement cost based stabilization theorist, Fritz Schmidt, had on the development of Sweeney's *Stabilized Accounting* (ibid., p. 107).

Clarke (1976) previously had argued that 'Sweeney and his stabilised accounting method have been misrepresented in much of the literature on the price-level problem in accounting' (p. 274). Specifically, Clarke asserted, '[g]rouping Sweeney and stabilised accounting with proposals for price level adjusted accounting of the CPP variety is mis-

leading: Sweeney preferred stabilisation on the basis of replacement cost or "reproductive" cost' (ibid., pp. 264–65).

This paper does not take issue with the assertion that Sweeney considered stabilisation based on replacement cost superior to stabilisation based on historical cost. *Stabilized Accounting* contains two inflation-accounting models. The first, the one he believed would be more readily adopted since it gave effect to the customary, original cost method of valuation, involves general price-level adjustments via indexation. The second, contained in the chapter entitled 'Stabilization Based on Replacement Cost', involves approximating the current replacement costs of nonmonetary assets and comparing those values with their price-level-adjusted values, the differences representing real purchasing power gains or losses. Sweeney makes clear his preference for the latter model when he writes that 'many competent judges [have come to look on the method] as superior to the customary one' (1936, p. 44).

Neither does the paper take issue with the assertion that Schmidt exerted influence on Sweeney. Sweeney reports that he and Schmidt exchanged ideas on the matter of stabilised accounting (1936, pp. 40–42) and that they debated in particular the matter of capital maintenance. The paper does, however, take issue with the contention that Sweeney had greater affinity with Schmidt than with Mahlberg. It argues instead that to identify Sweeney's stabilisation ideas—even those incorporating replacement costs—with Schmidt's replacement cost model is in itself misleading. Indeed, it argues that Sweeney's economic orientation was fundamentally different from Schmidt's and that for this reason Sweeney never fully accepted Schmidt's model. In addition, the paper argues that Sweeney's rejection of Schmidt's

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replacement cost model has broader implications. It suggests that Sweeney's and Schmidt's differering economic orientations reflect national attitudinal differences that have manifested themselves in more recent inflation accounting developments.

The question of Sweeney's 'Betriebswirtschaftslehre' affinities

Clarke and Dean (1989; also Dean and Clarke, 1989) base their contention that Schmidt's replacement cost model underlies Sweeney's stabilised accounting ideas in Sweeney's post-1928 writings. They agree that Sweeney's ideas in his pre-1929 writings (1927, 1928) rely extensively on Mahlberg, but they see a major shift in the thrust of Sweeney's ideas beginning with the publication of his article 'Maintenance of Capital' in 1930. They ascribe the pause in Sweeney's writing between 1928 and late 1930 to the impact of Schmidt, whom, they suggest (1989, p. 301), Sweeney may have heard speak at the September 1929 International Accounting Congress in New York City.[1] (Sweeney, 1935, p. 199n, refers specifically to a personal discussion with Schmidt on 30 September 1929.) Clarke and Dean characterise the series of articles Sweeney published between 1929 and the appearance of *Stabilized Accounting* in 1936 as reflecting his emerging preference for replacement cost stabilisation and conclude that '[h]e had thus plugged into the mainstream of the *Betriebswirtschaftslehre* movement through the work of its acknowledged foremost exponent' (1989, p. 301).

Sweeney does indeed refer to Schmidt in several of his post-1928 articles as well as in *Stabilized Accounting*. His theoretical preference for stabilisation incorporating replacement costs also clearly emerges in these articles,[2] perhaps being most definitively stated in his 'Stabilized Appreciation' (1932) and 'Technique of Stabilized Accounting' (1935). To speak of 'recourse' to Schmidt in these articles, however, is another matter; for when Sweeney refers to Schmidt in his post-1928 writings, it is generally in the context of ideological differentiation.

Specifically, Sweeney's direct references to Schmidt's ideas occur in the context of capital maintenance discussion. In his 'Maintenance of Capital' (1930), for example—his first post-1928 writing—Sweeney differentiates among several possible capital maintenance positions. According to the first of these, 'relative capital maintenance', the objective of maintaining capital is 'to preserve the same proportion of the total social capital as was possessed at the time the capital was orginally invested' (p. 277). 'Professor F. Schmidt', Sweeney notes, 'is sponsor of this view'. He then proceeds to reject the position on both theoretical and practical grounds. Theoretically, he writes,

such an opinion would seem to be . . . inaccurate because men usually engage in business to obtain, in the long run, greater command over goods and services than they had when they entered business and not, as a rule, to vie with one another for greater relative shares in whatever general economic goods the community may happen later to have (ibid.).

Practically, moreover, the theory was unsafe:

Any theory that permits the business man, as this does, to feel satisfied while failing to maintain the original value of his invested captial is likely to prove harmful, if not disastrous, to both the individual capitalist and society— much more so than a theory which . . . sanctions payments of large dividends from contemporary economic power exceeding that originally invested, . . . (ibid., p. 278).

In the same article, Sweeney also explicitly disavows both absolute physical capital maintenance and nominal capital maintenance for much the same reasons (ibid., pp. 279, 281) and declares the only defensible position to be one of 'real' capital maintenance, that is, one 'effected by preservation of general purchasing power' (ibid., p. 283).

In 'Stabilized Depreciation' (1931), Sweeney identifies depreciation based on reproduction cost with physical capital maintenance and criticises it accordingly. He then identifies stabilised depreciation—depreciation resting 'upon original cost adjusted for the change in average price levels' (p. 174)—with purchasing power capital maintenance. Subsequently, in conjunction with a passage elaborating on the differing motivations for stabilised depreciation based on reproduction cost, he cites Schmidt's replacement cost model (p. 176n) as an example of one that only 'aims to keep capital physically intact'.

Schmidt finds scarce mention in the remainder of Sweeney's articles. In 'Capital' (1933), Sweeney cites Schmidt's 'Valuation of Fixed Assets' (1929) in a footnote (1933a, p. 190n) listing several articles on 'valuation in accordance with the present-cost-of-production concept' (ibid., p. 190); and in his 1935 article, again in a note, he alludes to his

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[1]Sweeney himself (1936, p. xxii) states that he paused to read the French books and pamphlets on inflation accounting that had begun to appear. They were, he found, 'much easier to read than the German ones, . . .' as well as 'more mature, concrete, and practical'.

[2]Sweeney's model should, however, not be understood as developing during this period. According to Sweeney (1964, p. xxii), he had completed the second full draft of *Stabilized Accounting* by the fall of 1931 'with the main ideas fully developed and illustrated'. He decided to publish much of the material in a series of articles in order to 'reduce greatly the length and complexity, hence cost, of the final book'.

September 1929 conversation with Schmidt. This is not to say that Schmidt's ideas played no role in Sweeney's remaining 1930s articles (1932, 1933b, 1934a, 1934b). Sweeney in those articles frequently differentiates his stabilised accounting model based on replacement cost from pure replacement cost models and Schmidt, as an advocate of a pure replacement cost model, whether named or not, will have figured in the background as a point of comparison.

To be sure, Sweeney makes several specific references to Schmidt in *Stabilized Accounting*. The most substantive of these, however, occurs once again in the context of ideological differentiation. In the particular passage in question (1964, pp. 40–41), one to which Dean and Clarke also refer (1989, p. 105), Sweeney contrasts Schmidt's attitude concerning capital maintenance with his own:

> A clearer insight . . . may be had from consideration of the attitude of Professor Schmidt, the German authority on stabilized accounting . . . For a considerable number of years Professor Schmidt has been a staunch advocate of measuring capital and income with reference to physical capital, instead of real, general-purchasing-power capital . . . He wittily compared the author's plan with the procedure of a man who is so anxious to obtain eternal salvation that he judges each action by its expected effect on bringing him nearer his ultimate goal, rather than, as is customary, by its expected effect on bringing him nearer success in the practical affairs of this earthly life.
>
> The writer pleads guilty to this accusation . . .

In their reference, Dean and Clarke isolate the phrase 'the German authority on stabilized accounting' and cite it as part of their evidence of Sweeney's discipleship of Schmidt. (In Clarke and Dean, 1989, p. 302, they italicise the definite article 'the' for emphasis.) They cite the phrase, however, out of context. In its context, the phrase is merely appositive rather than restrictive. That apposition is indeed the tone of the phrase is borne out later in the text (1964, p. 193) when Sweeney refers to Schmalenbach as 'the German authority who made the statement appearing on the title page of this book' and, in the same paragraph, to Schmidt as 'another authority',[3] and in a footnote to the same paragraph to Mahlberg as yet 'another German authority on stabilized accounting'. Clearly, Sweeney regarded Schmidt as one authority among several.

Sweeney's treatment of Schmidt in his post-1928 writings, then, involves a process of philosophical or ideological differentiation, one in which he takes issue with Schmidt's views as he sets forth his own. Indeed, rather than having 'plugged into' the *Betriebswirtschaft* movement through Schmidt as Clarke and Dean contend, Sweeney makes clear the lack of agreement between his ideas and Schmidt's. Thus, Schmidt was not the 'acknowledged foremost exponent' of the *Betriebswirtschaft* movement in Sweeney's view.[4] It was instead Mahlberg whom Sweeney most admired. 'Of the German treatises on the subject', he wrote looking back in 1964 (p. xxi),

> the most logical, clear, complete, and practical was, by far, the book entitled 'Bilanztechnik und Bewertung bei schwankender Waehrung'. . . by Professor Dr. Walter Mahlberg of the University of Freiburg at Breisgau.

Sweeney's admiration for Mahlberg is hardly surprising, for as Graves previously has pointed out (1985, p. 160; 1989, p. 28), Sweeney's capital maintenance position accords in every respect with Mahlberg's. Indeed, the very function of accounting according to Mahlberg (1923, p. 13) was to determine whether or not the businessman's abstract purchasing power had remained the same or changed. Graves (1989) also has demonstrated that Sweeney's current cost/constant dollar idea of 'appreciation', which is perhaps the earliest conceptualisation of a holding gain net of inflation in the literature, is entirely congruent with Mahlberg's concept of a 'specific price-level premium', which represented the difference between the higher current value of a good and what the good's price would have been had its value risen at the same rate as general inflation.[5] Mahlberg, then, not Schmidt, appears to have provided the insight for Sweeney's stabilised accounting model incorporating replacement costs; and Sweeney, contrary to Dean and Clarke's assertions, to have had greater affinity with Mahlberg than with any other *Betriebswirtschaft* theorist.

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[3] The reference to Schmidt reads in full: 'And Schmidt, another authority, said that the accounting methods devised to correct balance sheets during inflation must, of course, be applicable to the similar, though smaller, errors that exist during periods of normal price change'.

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[4] In 1920s Germany Schmalenbach was generally considered the most eminent figure of the *Betriebswirtschaft* movement. According to Mahlberg (1923, p. 163), 'One cannot approach matters of accounting scientifically today and ignore Schmalenbach's dynamic theory; so much the less so since the fundamentals of the theory . . . capture the very essence of the ideas underlying practice'. Even Schmidt, whose ideas on valuation diametrically opposed those of Schmalenbach, found it necessary to cast his organic current value theory in the framework of the dynamic theory (cf. Graves, 1985, pp. 70–71 and 93–96).

[5] Graves (1985, p. 164) noted that in restating depreciable plant assets to their current replacement costs for purposes of determining appreciation Sweeney used item-specific indexes 'as Schmidt had illustrated in *Organische Tageswertbilanz*'. Sweeney, however, indicates (1933a, p. 149) that it was Mahlberg whose example he followed in applying such indexes.

Economic orientation and Sweeney's choice of accounting model

Sweeney's and Schmidt's discrepant attitudes towards capital maintenance, and thus Sweeney's lack of affinity with Schmidt, reflect the fact that Sweeney's economic orientation was fundamentally different from Schmidt's. Like Schmalenbach's and Mahlberg's, Sweeney's economic point of view was primarily a proprietary, micro one. In his 'How Inflation Affects Balance Sheets' (1934), Sweeney clearly evidences his entrepreneurial orientation in his definition of 'economic key men'. Noting that economists and accountants had considered the prospect of inflation from several different points of view including its effects on employment and power to pay debts, on real wages and the standard of living, accumulated capital, savings, and public finance, he points out that 'none seem [sic] to have given any thought at all to the effect that inflation is sure to have upon the ability of our economic key men to choose wise courses of economic action for us' (1934b, p. 277). He then defines 'economic key men':

> In practical business life these . . . men are the managers of business enterprises, whether large or small. These men may be filling the roles of entrepreneurs, or they may be merely the paid servants of the real entrepreneurs. But in any case the direction of economic activity, and the amount and intensity of it, are determined by these men (ibid.).

In line with this orientation, it is the value of original entrepreneurial investment, of, in Sweeney's words (1930, p. 283), 'the original absolute command exercised by the capital over the goods and services of most importance to the particular concern', Sweeney seeks to maintain. The purpose of accounting in Sweeney's view, accordingly, becomes to communicate whether or not such value has been maintained:

> Inasmuch as men customarily engage in business with or without capital, to obtain a greater supply of all sorts of scarce economic goods and services, the fundamental purpose of their accounting must ordinarily be to ascertain, as of subsequent specific moments, whether their goal has been attained. If general economic power, i.e., capital, was invested, accounting must be able to determine whether such power has been maintained and, consequently, how much income, if any, has been realized (1930, pp. 283–84).

Sweeney's entrepreneurial orientation was also Mahlberg's. As noted above, Mahlberg, too, saw the purpose of accounting as measuring abstract purchasing power. It was, moreover, the *businessman* whose abstract purchasing power was in

question. Indeed, Mahlberg professed to be a subscriber to Schmalenbach's dynamic theory, according to which, in Mahlberg's words (1923, p. 164), successive balance sheets provided an overview of the development of an enterprise and thus 'a basis for the current decisions of the entrepreneur *[die letzten Entschlüsse der Unternehmerpersönlichkeit]*'.

Schmidt's orientation, on the other hand, was primarily a societal, macro one. His stated concern in developing his 'organic current value' model, as he termed it (1929), was to overcome the problem of chronic, economy-wide business cycles. Schmidt believed business cycles were triggered by price-level changes and aggravated by the failure of historical cost accounting to measure profit or loss accurately when prices were rising. His theory[6] called for replacement cost valuations both in the balance sheet and profit and loss account in order to prevent the reporting and distribution of fictitious profits. Such distributions, he contended, led to increased demand while eroding the productive capacity of enterprises. The inevitable result was a business cycle. Replacement cost valuations also ensured the maintenance of the relative position of enterprises in the economy as a whole. Schmidt posited that given a price-level change each firm currently earning a normal return must retain its relative position in the economy if equilibrium were to be maintained. Schmidt's theory, accordingly, was one that sought to stabilise the economy as a whole. It was also one that necessarily concerned itself with the maintenance of physical capital since it was concerned with maintenance of relative productive capacity.

Sweeney clearly recognised the macro orientation of Schmidt's theory when he referred to Schmidt's capital maintenance position as maintenance of 'social capital' (1930, p. 277). He also clearly recognised the nature of his own economic orientation when he referred to purchasing power capital maintenance as maintenance of 'individual capital' (1930, p. 283). Indeed, because of their fundamentally different economic orientations and the discrepant capital maintenance positions those orientations entail, Sweeney could only have rejected Schmidt's replacement cost model.

Conclusion

Sweeney's rejection of Schmidt's replacement cost model provides a backdrop for comment on more recent developments in Germany and the United States as well as on the transfer of accounting models between cultures in general. In 1975 the

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[6]For a detailed description of Schmidt's organic current value model, see Graves (1985), pp. 69–117; also Clarke and Dean (1986).

German Institute of Auditors issued a Statement of Position on the matter of inflation accounting. The proposal, which apparently traces to Schmidt,[7] recommends calculation of that portion of historical cost income that must be retained in the company to maintain its productive capacity and thus assure 'continuation of the business and the jobs it provides' (para. 2). Specific guidelines call for depreciation and cost of goods sold to be valued on a replacement cost basis and for plant assets to be revalued using specific indexes. The concern here—preservation of the jobs companies provide—is for the general welfare; thus, the economic orientation is a macro, social one.

Such a macro approach would scarcely seem possible in the United States where the emphasis in financial accounting is on the investor,[8] the investor having supplanted the proprietor in this regard but still being popularly equated with the individual. And, in fact, the development of inflation accounting thought in the United States has reflected a micro orientation. Early official publications by authoritative accounting bodies, including *Accounting Research Study No. 6*, 'Financial Effects of Price-Level Changes', of 1963, *APB Statement No. 3*, 'Financial Statements Restated for General Price-Level Changes', of 1969, and the FASB Exposure Draft, 'Financial Reporting in Units of General Purchasing Power', of 1974, all call for general price-level-adjustment procedures that measure general purchasing power capital maintenance. And even after the incorporation of current value accounting in official pronouncements in the mid-1970s, the models called for become current cost/constant dollar models reminiscent of Sweeney's stabilised accounting based on replacement cost. Such was the case in FASB Statement No. 33, 'Financial Reporting and Changing Prices', and is the case in FASB Statement No. 89, also entitled 'Financial Reporting and Changing Prices', which is currently in force.

If Schmidt's macro orientation evidences an attitude capable of finding expression in public accounting documents in Germany, but not in the United States where emphasis is on the individual, Sweeney's rejection of Schmidt's replacement cost model may well reflect the degree to which underlying cultural differences may affect the acceptance of accounting models internationally.

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[7]Mattessich (1982, p. 357), for example, states that the German proposal 'was based on Schmidt's approach'. It should be noted, however, that the proposal implies maintenance of absolute physical capital rather than relative physical capital since its objective is to maintain employment levels.

[8]FASB Concepts Statement No. 1, 'Objectives of Financial Reporting by Business Enterprises', para. 34, cites the investor as the primary user of financial statements. Para. 35 speaks of '[i]ndividual investors, creditors, or other potential users of financial statements' (emphasis added).

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The Australian Differential Reporting Debate: A Survey of Practitioners

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Abstract—This paper reports the findings of an investigation into issues surrounding the differential reporting debate. This debate was formalised in Australia by the promulgation of the Australian Accounting Research Foundation's Exposure Draft 48—Proposed Statement of Differential Reporting. However, the foundation has chosen not to provide guidance as to the standards considered applicable to non-reporting entities within its differential reporting proposal. A postal survey of practising accountants across Australia examined the respondents' perceptions as to the standards applicable to firms varied by size and legal structure. The paper provides initial empirical results indicating the way in which practitioners will apply standards under the differential reporting provisions proposed in the exposure draft and raises questions for future research.

Introduction

Since the establishment of the Accounting Standards Review Board (ASRB) in 1984, Australian companies incorporated under the Companies Acta 1981 are generally required to comply with Approved Accounting Standards when compiling financial statements for disclosure purposes. Additionally, Australian Accounting Standards (AAS) apply to all incorporated and unincorporated entities, where a member of The Institute of Chartered Accountants (ICAA) or Austalian Society of Certified Practising Accountants (ASCPA) prepares the financial statements. Many practitioners consider such extensive reporting requirements to be extremely costly and in many cases irrelevant to some firms. In an environment of rapidly evolving disclosure regulation the differential reporting debate gathered momentum during 1988/89. This has resulted in the Australian Accounting Research Foundation's (AARF) release of Exposure Draft 48—Proposed Statement of Differential Reporting and subsequent policy statements. This paper examines issues surrounding the differential reporting debate.

Previous research findings indicate that practitioners play a key role in decisions regarding the content of financial statements for small businesses (Knutson & Wichmann, 1985; Holmes, 1988) and that practitioners' views tend to be those which are ultimately reflected in accounting standards (Walker, 1987). Exposure Draft 48 introduces a concept of differential reporting which allows departure from the professional standards, where any entity is classified as 'non-reporting'. According to ED 48, the decision as to whether an entity is 'non-reporting' is to be made by the practitioner responsible for statement preparation. Full compliance with the professional standards is required where any entity is classified as a 'reporting entity'. However, no guidelines exist for the minimum level of compliance with professional standards required for non-reporting entities. In effect this allows 'non-reporting entities' to apply accounting standards selectively when preparing financial statements for external users.

The opinions of practitioners were sought in 1989 regarding the appropriate application of the 23 Australian Accounting Standards to six legal and size structures, to provide guidelines for the application of specific standards to different reporting entities. The results of the survey provide a clear indication of practitioners' perceptions of the application of professional standards under the exposure draft. The results also indicate a relationship between entity size (as measured by gross sales) and legal structure, and the standards considered applicable to fulfil the entities reporting requirements. This raises questions concerning both the incentives for the responses received from practitioners and for future research.

Australian Accounting Standards

At present the Australian profession is governed by two sets of accounting standards: those approved by the National Councils of the ICAA and the

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ASCPA (Australian Accounting Standards, AAS) and those approved by the ASRB (Approved Accounting Standards). Approved Accounting Standards apply only to companies incorporated under the Companies Act 1981. Practitioners are also obliged to satisfy the reporting requirements of the Income Tax Assessment Act 1936 (as amended) in fulfilling the statutory requirements of clients. This in effect introduces a third set of reporting requirements.

In a few cases the application of an Approved Accounting Standard is restricted to companies identified within a particular standard (e.g. ASRB 1005, ASRB 1007 and ASRB 1017). Acceptance of this approach by the profession is found in AAS 22, where exempt proprietary companies have been relieved from the requirements of AAS 22 because ASRB 1017 excludes such companies from its requirements (Reilly, 1989, p. 56). This form of differential reporting is also taken by the Financial Accounting Standards Board (FASB) within the US. In general, however, in Australia accountants involved in the preparation of financial statements must support all accounting standards irrespective of the size or legal structure of the reporting entity (with very few exceptions) (Gibson, 1987, p. 16). The merger of the AARF and the ASRB (see English, 1988) has changed this position. At present, if an Approved Accounting Standard covers a topic similar in nature to an Australian Accounting Standard, the Approved Standard will override the Australian Standard. In such cases non-corporate entities in the private sector and public sector reporting entities will be exempt from compliance with the Approved Standard (AARF, 1989a, p. 53).

The differential reporting debate

Considerable debate has occurred over the past decade, particularly in the US, concerning differential reporting. Differential reporting relates to the imposition of different statutory and professional reporting requirements for different categories of reporting entities. The implication is that certain entities are exempt from applying some statutory and professional reporting requirements. This means that categories of entities are given legal and professional approval to provide relatively lower disclosure to external parties. Examples of different categories are large versus small entities, public as opposed to private companies or some combination of legal structure and size.

The Australian financial disclosure regulation environment has recently undergone a period of rapid change. Despite limited critical academic contributions on these issues, the regulatory trend supports financial reporting partitions at numerous levels. Many of these developments have had an impact upon the accounting standards to be applied. The Companies Act has recently recognised the concept of differential reporting by delimiting the application of the Seventh Schedule to certain corporations. In October, 1986 Schedule Seven reporting requirements were restructured, and in the course of this restructuring the schedule was effectively tiered, with different disclosure requirements for different types of companies:

> ... the whole framework of Schedule 7 has been changed to incorporate considerations of size and nature of all companies into disclosure requirements. (Walton, 1987, p. 211)

Companies in this category [exempt proprietary companies] (which represent the largest number of companies incorporated in this country) are only required to attach four notes to the prescribed format balance sheet and profit and loss account. These deal with:

—unearned revenue
—commitments
—contingent liabilities
—audit fees. (Walton, 1987, p. 212)

Specific sections of the Companies Act 1981 also provide for some form of differential reporting. For example, s. 273 provides for 'Relief from Requirements as to Accounts and Reports'. Basically, the directors of a company may apply to the Commissioner of Corporate Affairs for an order relieving them from compliance with any specified requirements of the code (s. 273 (1)). The directors must provide evidence that compliance would either render the accounts 'misleading' or 'impose unreasonable burdens' on the company (s. 273 (7)). For example, a number of companies have obtained the Commissioner's approval to write off the total balance of purchased goodwill as an extraordinary item for the 1984 financial year. North Broken Hill wrote off $372 million, Coles Myer $313 million and Pacific Dunlop $228 million. This 'temporary' exemption is contrary to the requirements of ASRB 1014 (Anderson & Pavletich, 1989).

Through their legislative backing various Approved Accounting Standards can have differential effects on corporations. For instance, McCahey (1987) emphasised the differential reporting implications of the ASRB's decision to limit the application of ASRB 1005 (Financial Reporting by Segments) and ASRB 1007 (Financial Reporting of Sources and Applications of Funds) to certain corporations.

Clearly, opportunities exist within a narrow range of accounting standards and Companies Act provisions for a measure of differential disclosure, yet these steps have not precluded a significant non-compliance with the prevailing requirements. Christofi (1977) examined the accounts of 100 publicly listed companies for the period ended 30

June, 1976. The average level of non-compliance was 22% accross the five standards (DS 1.2, DS 2, DS 4, DS 5 and DS 11). Christofi concluded that the reasons for departure from a particular standard 'are probably due largely to oversights or perhaps misinterpretations of some of the finer points of the standards' (p. 51). Trotman (1977) examined the annual reports of 150 publicly listed companies to ascertain compliance or otherwise with the reporting requirements of DS2—Valuation and Presentation of Inventories. With respect to compliance with various requirements of the standard, Trotman found that the majority of companies had failed to abide by a range of provisions in applicable accounting standards.

Morley (1979) reviewed the accounts of 3,124 companies belonging to 'each class of company (i.e. listed public, other public, proprietary and exempt proprietary)' (p. 31). Morley's results indicated that:

> Of the 3124 companies examined, 1272 appeared to have failed to comply with one or more of the accounting standards. (p. 31)

Other compliance studies (Gibson & Downey, 1980; Harris, 1981; Ramsay, 1982; Carnegie & Gavens, 1987; Kirkness, 1987) support the conclusion that there is a significant level of non-compliance with several provisions of a number of accounting standards.

More recently, Ramsay & Sutcliffe (1986) reviewed the accounts of 423 unaudited exempt proprietary companies to ascertain the level of compliance with AASs 1, 2, 4 and 6. The overall conclusion was that:

> The financial statements of exempt proprietary companies exhibit a much higher level of non-compliance with the requirements of selected statements of accounting standards than do the financial statements of listed public companies . . . (p. 52)

Ramsay & Sutcliffe stress that in an Australian context 'the differential reporting issue does not appear to have received much attention' (p. 48).

The willingness to implement differential reporting requirements by statutory bodies and government is evidenced by the differential reporting requirements of both the Companies Act 1981 and Approved Accounting Standards. However, the basis for delimiting the application of the Companies Act 1981, the Close Corporations Bill 1988 and a number of Approved Accounting Standards differs (McCahey, 1987, p. 35). While the arguments for such changes remain largely unproven, little evidence has been accumulated on how the profession is likely to react to these developments. The analysis presented in the remainder of this paper concerns the likely application of a differen-

tial reporting policy by the Australian accountancy profession.

Exposure Draft 48

The changes to legislation and professional reporting requirements discussed above led to the release by the AARF of Exposure Draft (ED) 48—Proposed Statement of Policy on Differential Reporting. The discussion within ED 48 centres on the concept of a 'reporting entity'. A reporting entity has been defined in ED 46A as an entity required to comply with all Statements of Accounting Concepts and relevant Accounting Standards. Entities which fall into this category are those in respect of which it is reasonable to expect the existence of users dependent on general purpose financial reports for information which will be useful to them for making and evaluating decisions on the allocation of scarce resources. Such entities are termed 'reporting entities' (ED 48 para. 4).

Paragraph 12 of ED 48 identifies those entities which will normally not need to prepare general purpose accounts as:

— close corporations;
— exempt proprietary companies (these corporations are required to report annually to the Corporate Affairs Commission, but are not normally required to report to additional third parties, unless required by debt agreements. The term 'exempt' refers to an exemption from an external audit);
— privately-owned trusts;
— partnerships other than those which control other reporting entities;
— sole traders; and
— wholly-owned subsidiaries of Australian reporting entities.

As presently framed, ED 48 considers that the above entities may become reporting entities where there is either: (i) separation of management and ownership of the entity; (ii) a significant level of borrowing by the entity; or (iii) the ability of the entity to exert significant economic influence. The AARF recognises that a concluded view on each of these circumstances for a particular entity rests with the professional judgement of the practitioner. Ultimately, the responsibility for the decision whether the entity will be a reporting entity and hence subject to Statements of Accounting Concepts and Accounting Standards in their entirety rests with the accountant. The consequences of that decision have not been explained by the AARF and serve only to promote professional uncertainty in exercising judgement.

The 'no guidance' basis of ED 48 and the subsequent responsibility of practitioners for the application of the proposed policy statement raises questions concerning the implementation of the

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statement by the profession. The perceptions of practising accountants were surveyed concerning the applicability of existing accounting standards to a number of business entities. The responses should assist in understanding how the provisions of ED 48 will be applied by practitioners. This information will be of particular relevance to those involved in policy decisions relating to ED 48 and differential reporting provisions of corporate legislation.

Method

In devising the sample frame of accountants the aim was to obtain coverage in a number of locations and across both regional and national firms. Accordingly, a sample of 286 practising accountants was randomly selected from the 1987/88 annual list of practising members of The Institute of Chartered Accountants in Australia. Thirteen accountants were no longer in practice, reducing the sample size to 273. Usable questionnaires were returned by 91 practitioners, representing a response rate of about 33%.

The primary question involved six hypothetical companies varied by size and legal structure, as follows:

Business A—publicly listed company with an annual turnover of $10,000,000.
Business B—publicly listed company with an annual turnover of $500,000,000.
Business C—private company with an annual turnover of $100,000.
Business D—private company with an annual turnover of $50,000,000.
Business E—sole trader with an annual turnover of $50,000.
Business F—sole trader with an annual turnover of $200,000.

Respondents were given a listing and brief description of the 23 Australian Accounting Standards and were asked to indicate whether each standard was considered applicable to the business described. This approach follows the research method undertaken by Knutson & Wichmann (1985).

Non-Response Bias

A comparison of answers of 'early' respondents and 'late' respondents was made. This is because it has been found that respondents sending in their questionnaires very late are roughly similar to non-respondents (Oppenheim, 1966, p. 34). The comparison indicated that non-response bias was not a major problem for this study. Significant response differences were infrequent and not systematically in any particular direction. It is important to keep in mind that such a conclusion can never be certain without information relating to the total population from which the sample is drawn.

Results

By way of introduction the practitioners were asked the general question: 'Do you consider a need exists for differential reporting requirements?'

Approximately 97% of respondents answered in the affirmative, indicating that a need is perceived to exist for some form of differential reporting requirements.

Size

Table 1 details the responses to the question requiring respondents to indicate the applicability of each standard for the six entity types. The six entities were classified by size according to gross sales turnover. An inspection of the aggregated responses in Table 1 suggests that a significant difference exists between large as opposed to relatively small businesses. Global chi-square tests were conducted to test for significant overall differences across the six groups of responses, at the 95% level of confidence, with the chi-square statistics reported in Table 2. The results in Table 1 indicate that there is a higher overall level of acceptance of the generally accepted accounting principles (GAAP) for the three largest businesses (ABD), when compared to the three smallest categories (CEF).

Further detailed analyses of size were made. It is interesting to note that there was no overall significant difference reported between the level of applicability of standards for the two public companies (A & B). A similar result was reported for the two sole traders (E & F). However, the results indicate a significant difference between responses for the private companies (C & D).

Legal Structure

The results presented in Table 2 indicate that the perceived reporting requirements for the three categories of legal structure identified are significantly different. The results of the chi-square tests indicate that there are no perceived differences in reporting requirements between the categories of public company. This result also holds for the sole traders. However, for the private companies, the importance of disclosure requirements is perceived as significantly different for large as opposed to relatively small private companies. Perhaps private companies with relatively low levels of turnover are classed in the same category as sole traders. This is certainly consistent with the results achieved.

Taxation Requirements

Because all business operations are required to lodge appropriate returns with the Australian Taxation Office, practitioners may have incentives (for

Table 1
Standards Appropriate

Firm Type

Standard	A Public Co. $10,000,000 No.	%	B Public Co. $500,000,000 No.	%	C Private Co. $100,000 No.	%	D Private Co. $50,000,000 No.	%	E Sole Trader $50,000 No.	%	F Sole Trader $200,000 No.	%
AAS 1—P & L	87	96	87	96	77	85	84	92	62	68	64	70
4—Depn	82	90	84	92	70	77	73	80	60	66	63	69
2—Invn	85	93	85	93	68	75	78	86	57	63	60	66
5—Mater	85	93	85	93	61	67	75	82	46	50	51	56
12—S & A	84	92	84	92	46	50	67	74	32	35	35	39
8—EOBD	85	93	85	93	53	58	73	80	27	30	32	35
15—Rev	79	87	80	88	45	50	57	63	26	29	26	29
9—Exp.c/f	85	93	83	91	45	50	69	76	25	28	27	30
6—Polic	85	93	85	93	45	50	62	68	24	26	27	30
20—Forc	82	90	83	91	42	46	64	70	22	24	24	26
10—NCA	84	92	85	93	43	47	64	70	22	24	24	26
21—AcqA	81	89	81	89	44	48	59	65	22	24	23	25
11—Const	79	87	82	90	35	39	58	64	20	22	21	23
19—JTV	84	92	84	92	40	44	62	68	19	21	21	23
18—Good	74	81	75	82	36	40	53	58	17	19	20	22
13—R & D	80	88	83	91	38	42	61	67	15	17	19	21
17—Leas	79	87	80	88	32	35	56	62	15	17	16	18
23—Debt	80	88	81	89	32	35	51	56	14	15	15	17
7—Ext	81	89	82	90	28	31	53	58	13	14	18	20
22—Relp	81	89	81	89	33	36	54	59	9	10	10	11
3—Tax	81	89	83	91	27	30	50	55	5	5	5	5
16—Segt	74	81	79	87	16	18	45	50	4	4	7	8
14—Equ	69	76	72	79	12	13	34	37	1	1	1	1

Note: The full titles of the 23 Australian Accounting Standards are listed in the Appendix.

example, the fixed cost of knowledge) to support differential reporting requirements based on the Income Tax Assessment Act 1936. This line of reasoning is supported by the results of a recent study of practitioners reported by McCahey & Ramsey (1989):

Accountants were asked to identify the basis generally used by them in preparing financial reports for privately owned companies.

The majority of accountants selected the income tax basis, which is some indication that privately-owned company financial reports prepared by a majority of public accountants are not general purpose financial reports, but are prepared specifically to comply with income tax requirements. (pp. 44–45)

The responses to the question 'would it be appropriate to base differential reporting guide-

Table 2
Chi-Square Tests for Significant Differences between Responses for the Six Business Types

Firm

Firm	A Public Co. $10,000,000	B Public Co. $500,000,000 χ^2	C Private Co. $100,000 χ^2	D Private Co. $50,000,000 χ^2	E Sole Trader $50,000 χ^2	F Sole Trader $200,000 χ^2
A		0.9*	1363.3	207.5	10567.0	9362.8
B			1467.8	233.5	11314.4	10013.4
C				162.4	620.4	490.7
D					3409.5	2884.5
E						7.2*

Note: *indicates that the result is not significant at the 95% confidence level; df = 22.

lines upon the requirements of the Income Tax Act?' do not support this viewpoint, in that approximately 60% of responses answered in the negative (significant at $p > 0.05$).

Overall, these results support the AARF's 'entity characteristic' classification scheme for aiding the identification of entities who may adopt some form of differential reporting. Whilst other entity characteristics noted in ED 48 were not tested, the relative 'degree of borrowing' and level of 'significant economic influence' are likely to be proxied by our size variable (Watts & Zimmerman, 1986). The next section of this paper outlines the implications of the results with respect to the application of ED 48, discusses the incentives influencing practitioners to respond as reported, and raises questions for future research.

Implications

This study sought to test whether Australian practitioners perceive a need for differential reporting requirements. Similar studies have been conducted in the United States (Abdel-Khalik, 1983; Knutson & Wichmann, 1985). However, the statutory and associated bodies responsible for setting reporting requirements have supported the viewpoint that there is only limited demand for a formal set of differential reporting requirements. Overall, the results support the need for some form of differential reporting. The primary basis favoured by the respondents was the purpose of the financial statements. The responses also indicate that many of the 23 accounting standards are perceived as inappropriate to smaller businesses. An examination of Table 1 shows that significantly more accountants supported all 23 standards for public companies (companies A and B), and almost all standards for large private companies (company D), with the exclusion of AAS 14 (Equity Accounting) and AAS 16 (Segmental Reporting). However, for relatively smaller businesses (businesses C, E and F), only four standards are considered appropriate: AAS 1 (Profit & Loss Statement); AAS 2 (Valuation & Presentation of Inventories); AAS 4 (Depreciation of Non-Current Assets); and AAS 5 (Materiality in Financial Statements) (marginal support). These standards primarily relate to valuation and disclosure relevant to the calculation of the profit or loss from operations.

It could be logically inferred that the reason many standards are considered inapplicable is because they are not relevant to the 'normal' business activities of small entities. However, standards such as AAS 3 (Tax-Effect Accounting), AAS 17 (Accounting for Leases) and AAS 21 (Accounting for the Acquisition of Assets) would be expected to relate to all entities, but are seen as inapplicable to smaller entities by the majority of respondents.

In evaluating the applicability of ED 48, submissions by interested parties were invited by the AARF. The AARF received 130 submissions on ED 48 which 'represents possibly the highest response rate of any exposure draft previously issued by the foundation' (AARF, 1989b, précis). It is also interesting to note that 'most of the submissions were received from accountants in public practice in small to medium-sized firms' (AARF, 1989b, précis). Of those who made submissions, 106 supported the basis for differential reporting advocated in ED 48. As outlined previously, ED 48 requires that 'reporting entities' prepare financial statements which abide by all standards, whilst 'non-reporting entities' need only abide by all applicable standards, when the statements are 'general purpose'. These guidelines are very subjective, placing the onus upon the practitioner to determine abidance or otherwise. Hence the exposure draft does little to provide for objectively determined output under differential reporting.

The results presented are indicative of the perceived application of ED 48 by those required to implement its provisions—accounting practitioners. The results presented in Table 3 report Spearman's rank correlation coefficients, between responses, for the six business types. For all categories of responses, based on size and legal structure, the rankings are highly correlated. This indicates strong consistency in the application of standards across the entities nominated in the questionnaire.

As we only sought the perceptions of the respondents, care must be taken in drawing conclusions from the results obtained. However, the results clearly indicate that the accountants believe that substantially reduced reporting measures relating to entity size and legal structure are appropriate. Support is also found for delineating the nature of reporting requirements based upon the purpose of financial statements, as proposed in ED 48. These results are considered consistent, in that 'general purpose' (full GAAP) statements are designed to meet with the expectations of third party users. Relatively larger organisations with more complex legal structures are more likely to have third party statement users, who have direct access to company records or specific purpose statements. This is consistent with the submissions made to the AARF on ED 48, in that, of 130 submissions, 106 were in support of the exposure draft.

Conclusion

The results of the survey of practising accountants support the AARF's proposal that an appropriate guideline for distinguishing reporting from non-reporting entities should be on the basis of both size and legal structure. Practitioners were surveyed as

Table 3
Spearman's Rank Co-efficient of Correlation Between Responses for the Six Business Types*

Firm	A	B	C	D	E	F
	Public Co.	Public Co.	Private Co.	Private Co.	Sole Trader	Sole Trader
Firm	$10,000,000	$500,000,000	$100,000	$50,000,000	$50,000	$200,000
A		0.922	0.774	0.858	0.734	0.772
B			0.746	0.848	0.714	0.756
C				0.934	0.982	0.980
D					0.921	0.937
E						0.991

*Rho correlated for ties.

they have a major influence in the standard setting process and assume significant responsibilities under the proposed policies. However, it is acknowledged that there are certain limitations with the focus on accountants. It is proposed in a future study to canvass the perceptions of both owner/managers and loan officers from lending institutions. The paper outlines the arguments posited for differential reporting. A popular argument is that the relatively high cost of compliance for small firms warrants differential reporting requirements. However, no evidence has been provided concerning the relative costs of compliance. It is considered a matter for future research to attempt to adduce some evidence as to the economic consequences of imposing the burden of full compliance on small entities.

Overall, the findings indicate an obvious demand for differential reporting requirements associated with business size and legal structure. The AARF and ASRB within ED 48 support this finding. However, the 'no-guidance' basis of ED 48 must be addressed. The results of this paper indicate the manner in which ED 48 will be applied by the profession and therefore raise some interesting questions for future research.

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Appendix

Australian Accounting Standards (AAS) in 1989

AAS 1—Profit and Loss Statements
AAS 2—Valuation & Presentation of Inventories
AAS 3—Tax-Effect Accounting
AAS 4—Depreciation of Non-Current Assets
AAS 5—Materiality in Financial Statements
AAS 6—Accounting   Policies: Determination, Application and Disclosure
AAS 7—Accounting for the Extractive Industries
AAS 8—Events Occuring After Balance Date

AAS 9—Expenditure Carried Forward
AAS 10—Revaluation of Non-Current Assets
AAS 11—Accounting for Construction Contracts
AAS 12—Statement of Sources & Applications of Funds
AAS 13—Accounting for Research & Development Costs
AAS 14—Equity Method of Accounting
AAS 15—Disclosure of Operating Revenue
AAS 16—Financial Reporting by Segment
AAS 17—Accounting for Leases
AAS 18—Accounting for Goodwill
AAS 19—Accounting for Interests in Joint Ventures
AAS 20—Foreign Currency Translation
AAS 21—Accounting for the Acquisition of Assets
AAS 22—Related Party Disclosures
AAS 23—Set-off & Extinguishment of Debt

Prospectus Earnings Forecasts and the Pricing of New Issues on the Unlisted Securities Market

Kevin Keasey* and Paul McGuinness*

Abstract—This paper extends the primarily US based literature on management earnings forecasts to an investigation of the role of prospectus earnings forecasts (Pefs) on the pricing of new issues on the Unlisted Securities Market (USM) in the UK. The analysis finds that Pefs are no more biased but are significantly more accurate than time-series forecasts. In addition, traded prices of USM stocks immediately after flotation are found to be positively related to the information content (unexpected component) of the Pefs. There is, however, no evidence of a relationship between the information content of Pefs and the initial offer price of the USM stocks.

Earnings forecasts have been a topic of interest in the US accounting and finance literatures for some time. Early studies were concerned with the accuracy of forecasts (e.g. Daily, 1971; Copeland and Marioni, 1972; McDonald, 1973; Ruland, 1978). These were followed by studies concerned with establishing the information content of earnings forecasts (e.g. Foster, 1973; Patell, 1976; Beaver *et al.*, 1979; Ajinka and Gift, 1984). This paper builds on and extends the existing literature by investigating the impact of prospectus earnings forecasts (Pefs) on the pricing of shares of companies seeking a flotation on the Unlisted Securities Market (USM) in the UK.

The first section of the paper provides a brief background to the USM and the formation of Pefs. The second section develops the research objectives and the third discusses the experimental design. The fourth section describes the data, variables and empirical methods employed. Section five contains the empirical results and the final section presents a discussion of the results and conclusions.

Background to the USM

For companies wishing to enter the USM there is no binding obligation for the prospectus to contain an earnings forecast. The USM simply requires a statement as to the financial and trading prospects of the company to be included in the prospectus when a flotation is sought. In general, however, a large proportion of companies going to the USM provide a forecast, The prospectus is prepared prior to the flotation date and conveys data relating to the terms of issue (including the offer price), past company performance and the future earnings potential of the company. The paper concentrates upon this last element of data.

Companies gaining flotations on the USM since its inception in November 1980 have been, on the whole, relatively small with short business histories. As a consequence any forecast of future earnings has the potential to signal a considerable amount of information relating to future performance. The forecast represents earnings before taxation and extraordinary items and is provided by the owners of the company prior to flotation and ratified by a number of advising agents to the issue; of particular relevance are the sponsor and reporting accountant. A letter is required in the prospectus from the reporting accountant to validate the procedures adopted by the owners in arriving at the forecast. The sponsors in turn provide a supporting letter to reflect upon the due diligence of the owners in arriving at the forecast.

Research objectives

The primary purpose of this paper is to determine if Pefs have an influence on the pricing of new issues. The first part of this section outlines theories which suggest that earnings forecasts might contain information relevant to the pricing of new issues. Miller and Modigliani (1958) give the relation between firm value and earnings, and the necessity of considering the capitalised value of the 'stream of profits over time'. Hamada (1969) shows, via some restrictive conditions, that the

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value of a firm depends only on the probability distribution of the firm's future earnings and market factors that set the risk-return payoff relation.

In essence, the expectation of a relationship between earnings forecasts and the pricing of new issues is just a restatement of the semi-strong form of the efficient market hypothesis (Fama, 1970), where pricing responds efficiently to the public disclosure of new information. Furthermore, earnings forecasts could be viewed as a signal used by management to disclose their private information. The signalling view of earnings forecasts has been developed by Verrechia (1983) and Trueman (1986). In Verrechia's model a manager who seeks to maximise firm value and who is in possession of private information will have an incentive to disclose it if it conveys good news in order to receive a higher firm valuation from investors. Aware of this behaviour, investors will interpret the absence of a disclosure as meaning that managers possess bad news. Because of this all managers, except those with the most negative news, will be motivated to release earnings forecasts, assuming no costs of disclosure. In contrast to this content view of earnings forecasts acting as a signal, Trueman (1984) presents an argument where the very act of disclosure conveys information to potential investors.

The above arguments suggest that earnings forecasts might have information content. Patell (1976) summarises the above by stating that the extent to which earnings forecasts alter investors' beliefs may be a function of at least three attributes:

(a) the imputed accuracy of the forecast,
(b) the additional information in the forecast, and
(c) the imputed motivation for disclosure.

All of these are considered to varying degrees in the present paper via the usual route of earnings forecast errors (EFEs). The paper first considers the accuracy and bias of prospectus forecasts. This is followed by an analysis of the determinants of the accuracy of prospectus forecasts relative to the accuracy of time series forecasts. Finally, the role of prospectus forecasts for the pricing of new issues is investigated.

Experimental design

The first step in trying to understand the role of prospectus forecasts for the pricing of new issues is investigated by analysing the accuracy and bias of forecasts.

Forecast Accuracy and Bias

An understanding of the accuracy and bias of prospectus forecasts is achieved by analysing the earnings forecast errors (EFEs) in the year after flotation. Each Pef gives an estimate of earnings for an accounting year that terminates at the first

accounting year end post flotation. Comparing actual earnings figures for this accounting year with the Pef gives one indication of the accuracy and bias of Pefs (see, for example, Fried and Givoly, 1982; Imhoff and Pare, 1982; and Cox, 1985).

However, this type of comparison also needs to be applied to other forecasts if Pefs are to be fully evaluated. The obvious benchmark to adopt is the best alternative forecast available from using past earnings data. One possible forecast would be one which uses the last available earnings figure for a company pre-flotation. Assuming a Martingale process, this becomes the forecast of earnings for the year terminating at the first accounting year end following flotation (referred to as the RWALK forecast). There is an extensive literature which supports the use of a general random walk earnings forecast (for example, Beaver, 1970; Ball and Watts, 1972; Watts and Leftwich, 1977; and Albrecht, Lookabill and McKeown, 1977).

A second alternative forecast is obtained by taking the last available earnings figure before flotation and adding on a drift term. Given the growth potential of companies going for a USM listing, the second forecast is expected to be more accurate than the random walk forecast. The drift term was derived as the average growth in earnings over the three years of earnings figures pre-flotation[1] (referred to as the TREND forecast). Having derived the alternative forecasts, earnings forecast errors can be determined as described above and then compared.

Explanations of the Information Content of Pefs

Having examined the accuracy and bias of Pefs and time series forecasts, the analysis moves on to examine possible explanations of the information content of the Pefs. The information content of prospectus forecasts is defined relative to time series forecasts: that is, the extent to which prospectus forecasts differ from expected earnings. For each observation an information content measure is calculated as the difference between the Pef and the best alternative forecast available from past earnings data. As the latter is a proxy for expected earnings, the difference in earnings forecasts provides an estimate of the unexpected portion (information content) of the Pef.

In terms of explaining the information content of the Pefs, the variables of direct interest relate to those responsible for the preparation of the forecast. The owners are ultimately responsible for the preparation of Pefs and the sponsors and reporting

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[1] The Box-Jenkins (ARIMA) method of forecasting time series data has a number of desirable properties. However, since the majority of the firms included in this study have short business histories, it was not feasible to formulate such forecasts.

accountants ratify the Pefs made by the owners. On an intuitive basis, a positive relationship between the retained ownership interest, the quality of the advising agents and the information content of the Pefs is to be expected. Equally, however, there could be a negative relationship if poorer quality agents and owners who retain less equity are motivated to over-estimate future earnings. Consistent with this second argument is that high quality advising agents have greater reputational capital and therefore significantly more to lose from overestimating earnings than poorer quality agents. There is, however, little formal theory on which to base hypotheses for this issue. This part of the analysis should, therefore, be seen as it is intended: an initial piece of exploratory research that provides a background to the later empirical analysis.

In examining the role of owners and advising agents in terms of the information content of Pefs, a number of other influences need to be controlled. For example, it seems reasonable to expect the information content of a Pef to be related to the uncertainty surrounding the earnings being forecasted and, therefore, to be conditional (see Rock's (1986) underpricing model) on the industry of a firm, on the age of a firm and on the length of forecast period. However, a model that links forecasted earnings, the variability of earnings and the information content of Pefs to these variables is not formally specified.

Pefs and the Pricing of New Issues

(a) Explanatory Variables

Once the accuracy and bias of Pefs and possible explanations of their information content have been examined, the effect of the information content of Pefs on the pricing of new issues is investigated. The general hypothesis is that the prices of new issues should be positively associated with the information content (unexpected portion) of the Pefs. As well as the information content of the Pefs having a possible influence on the offer and traded prices of new issues, there are other explanatory factors which need to be considered. First, the very act of forecast disclosure is expected to influence the pricing of new issues. Firms that issue a Pef are expected, *ceteris paribus*, to obtain more favourable pricing of their shares than firms not disclosing an earnings forecast. The effect of the non-disclosure of a prospectus forecast will be investigated in terms of the initial offer price on placement and in terms of share prices once active trading in the shares takes place.

Second, a number of other variables that have been hypothesised by various authors to be influential in the initial pricing of shares need to be investigated. There is a reasonably extensive literature that uses relatively simple models to consider how entrepreneurs might signal the value of their

firms to potential investors (for examples, see Leland and Pyle, 1977; and Titman and Trueman, 1986). As it is not the purpose of the present paper to test the gamut of signalling theory, only those signals that seem most appropriate to the pricing of new issues on the USM are investigated. The signals considered, in addition to the Pef, are the percentage of equity retained by the entrepreneur and the quality of the chosen advising agents (reporting accountant, broker, sponsor).

Leland and Pyle (1977) demonstrated that the percentage of equity retained by the entrepreneur in his/her firm can reveal his/her private information. Higher percentages of retained equity, *ceteris paribus*, imply that the personal portfolio of the entrepreneur is less well diversified. In general, an entrepreneur would only be willing to take on such higher risks in the expectation of higher returns. Therefore, the higher the percentage of equity retained, the more favourable the entrepreneur's expectations of future performance. The investor will then be able to use the percentage of equity retained as a signal of firm value. In addition, Titman and Trueman (1986) argue that the quality of the advising agents chosen by the entrepreneur when going public also provides information about the value of the firm to investors:

> The model, however, is also applicable. . . to the entrepreneur's choice of the quality of any outsider who can provide information about the firm. . . An owner with more favourable information will be willing to pay the (presumably higher) fee of a more accurate auditor since the information provided to investors by the auditor is likely to be favourable (p. 160).

(b) Control Variables

In addition to the above signalling variables, a number of variables are used to control for other determinants of the pricing of new issues. Given that new issues on the USM seem to be generally underpriced (the present dataset confirms that the offer prices of issues are generally below the immediate post flotation prices), Rock's (1986) model of the underpricing of initial public offerings suggests that the fundamental uncertainty associated with new issues needs to be controlled for. In a partial testing of Rock's doctoral dissertation version of the model (1982), Ritter (1984) argued that the age of a firm and the average sales of a firm could proxy for the fundamental uncertainty associated with an issue. Furthermore, given its prominence in the theoretical and empirical literatures, a debt to equity ratio is also used to proxy for the risk associated with an issue. Finally, given the empirical results of Ritter (1984) for Hot Issue Markets that certain industries might be at the mercy of exploitative underwriters, an industry dummy is included to capture the possibility that

the underpricing of shares might be industry specific.

Ritter's work also suggests that the state of the USM at the time of flotation might be an important determinant of the initial issue price of a flotation. This is controlled for by using the average growth in the USM Datastream market index over the two months preceding flotation. Measures for growth over a period of more than two months were also used but no substantive differences were noted from the measure defined over two months.

Data, variables and empirical methods

Data

The sample frame for the investigations to be carried out in this paper consists of placement flotations for the years 1984, 1985 and 1986. Only placements are considered as a method of flotation because they formed the majority of flotations during the period of interest (over 80% were placements). In addition, different methods of flotation give rise to different costs and because flotation costs serve as one measure of the quality of the advising agents ratifying the original owners' Pefs, only one method of flotation is considered. There were 228 placements on the USM during 1984, 1985 and 1986. This sample frame is reduced to 194 companies because of missing data. Of these 194 companies, 121 provided a Pef. The data sources used were the Peat Marwick Mitchell Quarterly Survey of the USM, the Hoare Govett Annual Directory of the USM and the Extel Financial Service.

Variables and Empirical Methods

This section describes the three different types of empirical analysis presented in this paper. Whilst it would be usual to keep variable descriptions separate from the exposition of empirical methods, for the present purposes the exposition of the empirical analysis is considerably eased if the dependent variables are described with the relevant empirical analysis. Once the forms of the empirical analyses and dependent variables have been described, a final sub-section will briefly describe the explanatory variables. The dependent and explanatory variables are summarised in Appendix I.

(a) The Accuracy and Bias of Earnings Forecasts

The accuracy and bias of forecasts are examined by developing measures of forecast error. Following Imhoff and Pare's (1982) conclusion that results regarding forecast accuracy/bias are insensitive to the error metric used, the form of the earnings forecast errors (EFEs) adopted here is as follows:

$$EFE = \frac{\text{Actual Earnings—Forecast Earnings}}{\text{Forecast Earnings}}$$

If the above is taken as it stands it measures the bias of a forecast. Taken in absolute form it measures the accuracy of a forecast. These measures are defined for the prospectus forecast (EPR) and the trend and random walk time series forecasts (ETR and ERW respectively). The evaluation of the prospectus forecast then proceeds by considering the mean and standard deviation of the above measures for the prospectus and time series forecasts. In terms of statistical tests, it is now accepted that the parametric paired t-test is inappropriate by itself for testing mean error differences of forecast methods applied to cross-section earnings data (see Brown and Rozeff, 1978). A test statistic that is insensitive to error definition and outliers, such as the Wilcoxon Matched Pairs Signed Ranks test, is therefore used as an additional check.

(b) Explanations of the Information Content of Pefs

The determinants of the information content of Pefs are analysed by regressing an information content variable (INF) on a number of explanatory variables. The dependent variable INF is defined as follows:

$$INF = \frac{\text{Pef—Alternative Forecast}}{\text{Alternative Forecast}}$$

The alternative forecast in the above measure is the best (in terms of accuracy and bias) of the time series forecasts. In all the regression equations and tests presented, any necessary corrections for heteroscedasticity are carried out using the Halbert-White technique.

(c) The Pricing of New Issues

Analysis of the effect of Pefs on the issue and traded prices of shares is conducted using the following dependent variables. In terms of the initial offer price of an issue, to control for the inherent value of a company, the ratio of the market capitalisation for a company at the time of issue to the book value for the company at this date, (M/B), is used as the dependent variable. In terms of analysing traded prices, the nature of the placement process is such that USM shares are often offered at a significant discount below future traded price.[2] An examination of discounts between issue price and future traded price was made for intervals of 2 weeks, 3 weeks and 1 month. Analysis of the data suggested that the majority of the discount was eliminated after 1 week of trading. Previous studies in the UK, albeit for the full listed market, have noted the arbitrariness in determining such discounts,

[2]In a placing the shares are 'placed' with a broker who can in turn distribute the shares to his clients (at the offer price) before trading commences. Only a small number of investors have access to the shares on placing.

although support is offered for the measurement of such discounts over the first five days of trading (see Buckland, Herbert and Yeomans, 1981). The discount measure to be used here (DISC) is defined as:

$$\left[\left[\frac{\begin{array}{c}\text{Share Price 1 Week}\\\text{After Flotation}\end{array}}{\begin{array}{c}\text{Share Price at}\\\text{Flotation}\end{array}}\right.\right.$$
$$\times\left.\left.\frac{\begin{array}{c}\text{Datastream USM Market}\\\text{Index at Flotation}\end{array}}{\begin{array}{c}\text{Datastream USM Market Index}\\\text{1 Week after Flotation}\end{array}}\right]-1\right]*100$$

The DISC variable controls for general market movements in the USM between the flotation date and one week of trading post flotation.

(d) Explanatory and Control Variables

The above has described the dependent variables for the various issues to be examined. The descriptions of the explanatory variables are given below.

The advising agent variables used to test the Titman and Trueman hypothesis and to act as explanatory variables of the information content of the Pefs are derived as follows. The period between the market's inception in November 1980 and December 1983 was used to gauge the quality of advising agents to new issues for the years 1984, 1985 and 1986, the assumption being that agent quality or reputation is based upon past experience in the preparation of Pefs for the USM. Dummy variables are used to describe agent quality, where a value of one signifies agents of high quality and a value of zero signifies agents of lower quality. As far as sponsors (SPON) are concerned, a value of one is accorded to any sponsor of an issue that has had involvement in three or more flotations on the USM prior to 1984. In terms of reporting accountants (ACC), a Big 8/non-Big 8 split was established in terms of fee income. This dichotomy did not, however, coincide with the number of USM flotations dealt with by the reporting accountants prior to 1984. Instead, a big 11 is defined as being those reporting accountants who had both the highest overall fee incomes (*Accountancy*, 1983) and the most experience of flotations on the USM from its inception to the end of 1983.

In addition to the dummy variables, flotation costs (FLOT) are used as a further measure of agent quality, in the sense that an entrepreneur might be prepared to pay more for higher quality agents the higher the growth potential of his/her company. Companies with poor future growth prospects would not be prepared to incur the higher costs of 'higher quality' agents to reveal such poor prospects.

Another signal of the future performance of a company at the time of flotation is the percentage

of equity retained by the owners (REA). It is expected to be positively signed, in the share price equations, in accordance with Leland and Pyle (1977).

As argued in the previous section, in addition to the signalling variables there are a number of variables needed to control for company risk, the state of the market and the nature of the forecasts used. Risk is measured by variables representing company age (AGE), industrial classification (IND), the debt to equity ratio (DEBT) and by the average sales over the three years prior to flotation (AVSL). The state of the market is measured by the growth in the USM Datastream Market income over the two months preceding a flotation (GRO).

The possibility that companies providing a prospectus forecast might have a stronger earning potential than those companies not supplying a forecast, is controlled for by the inclusion of a dummy variable (DF). Finally, the length of time elapsing between the flotation date and the next accounting year end following flotation is controlled for by a length of forecast period variable (LF). This final variable is included because Pefs cover a forecast period ranging from 1 month to 12 months between forecast date and the following accounting year end. In terms of explaining the information content of Pefs, it is difficult to sign the expected relationship between the information content measure of Pefs (INF) and the length of forecast period available (LF). *A priori*, it is unclear whether the 'benefits' of a Pef forecast as compared to an alternative forecast are going to be more prominent the shorter or longer the forecast period.

Results

Forecast Accuracy and Bias

Of the 194 companies available for analysis, only 121 provided a Pef. Table 1 shows the EFEs for the three types of forecasts considered: namely EPR, ETR and ERW. For the EPR variable two very extreme outliers were truncated to the mean of the series without the inclusion of the outliers. As is usual practice (see Fried and Givoly, 1982), this truncation of the distribution of EPR was introduced to avoid distortions and to suppress data/measurement errors.

The first row of Table 1 indicates that the earnings forecast errors associated with the prospectus forecast (EPR) are not statistically less biased than the TREND forecast but both of these are statistically less biased than the RWALK forecast. However, all three types of forecast exhibit positive bias (they generally underestimate future earnings). These t-statistic results are supported, as were all the others, by the robust Wilcoxon Matched Pairs Signed Ranks test.

Table 1
Earnings Forecast Errors Associated with the Use of PEF, TREND and RWALK Forecasts

Mean Relative Prediction Errors

		EPR	ETR	ERW
1.	(Bias) All Cases			
	Mean	0.05	0.09	0.40
	S.D.	0.19	0.61	0.76
	Paired T Tests			
	(Difference between means)		−0.69	−3.51*
2.	(Accuracy) All Cases			
	Mean	0.11	0.38	0.53
	S.D.	0.16	0.49	0.67
	Paired T Tests		−5.76*	−1.98*
3.	Cases of Positive Errors			
	Number	109	62	96
	Mean	0.09	0.49	0.60
	S.D.	0.10	0.63	0.71
	Paired T Tests		−4.96*	−1.02
4.	Cases of Negative Errors			
	Number	12	59	25
	Mean	−0.28	−0.29	−0.31
	S.D.	0.37	0.27	0.42
	Paired T Tests		0.10	0.22

Wilcoxon Matched Pairs Signed Ranks Test for Bias Metric

EPR with ERW $Z = -6.1432*$
ETR with ERW $Z = \ \ 8.7745*$
EPR with ETR $Z = -1.5124$

*Denotes significance at the 5% level.

In terms of accuracy (the absolute measure of error), Table 1 indicates that the Pef is statistically more accurate than the TREND and RWALK forecasts. In terms of the positive errors of the forecasts, the statistics indicate that the Pef underestimates actual earnings significantly less than the other forecasts. However, for the negative errors, the t-statistics indicate that Pefs do not significantly overestimate more than the other forecasts.

The results, therefore, indicate that in general the prospectus forecast is no more biased than the time series forecasts but is significantly more accurate. In terms of the time series forecasts, the TREND forecast dominates the RWALK forecast across the dimensions of interest and will, therefore, be used as the alternative forecast when measuring the information content of the prospectus forecast.

Explanations of the Information Content of Pefs

The regression results for the determinants of the information content of Pefs are presented in Table 2. Equation 1 shows that advising agent quality, both in terms of the reporting accountant and the sponsor, is significantly related to the information content of the Pef. The relationship between agent quality and information content is negative, implying that higher quality agents are involved in disclosing more conservative estimates of future earnings than lower quality agents. Little theory is available to explain this result, although this finding is consistent with the view that higher quality agents have significant reputational capital at stake when auditing or ratifying a forecast and therefore have an incentive to err on the side of caution. No support is found for the relationship between the percentage of equity retained in the new issue by the initial entrepreneur and the information content of the Pef.

Equation 2 of Table 2 substitutes the flotation cost[3] variable (FLOT) for the advising agent variables (SPON and ACC) on the premise that flotation costs should be an increasing function of agent quality. Little support is generated for this variable. This part of the analysis, therefore, suggests that advising agents rather than the original owners of the firms are responsible for the information content of Pefs.

The Pricing of New Issues

Equation 1 of Table 3 indicates that the market to book value of a company at flotation is not

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[3]Regressing flotation costs on the advising agent dummy variables ACC and SPON did not reveal significant correlations.

Table 2
Explanation of the Information Content of PEFS

(1) INF = -0.63 $-$ 0.69 ACC $-$ 0.55 SPON $+$ 1.61 REA $+$ 1.51 LF
       $(-0.56)(-1.96)$** (-1.66)* $\quad$ (1.02) $\quad\quad$ (0.24)
       N = 121 $F_{4,116} = 2.02$ $R^2 = 0.07$

(2) INF = -0.75 $-$ 0.29 FLOT $+$ 1.43 REA $+$ 3.00 LF
       $(-0.55)(-1.30)$ $\quad\quad$ (0.879) $\quad$ (0.48)
       N = 121 $F_{3,117} = 1.13$ $R^2 = 0.03$

*significant at the 10% level (2 tailed test).
**significant at the 5% level (2 tailed test).

Table 3
The Initial Pricing of New Issues

(1) M/B = -4.81 $-$ 0.01 INF $+$ 0.01 AVSL $+$ 1.70 IND
       (-0.65) (1.31) $\quad$ (8.83)** $\quad\quad$ (0.86)
       -1.81 AGE $+$ 0.06 REA $+$ 0.03 GRO $+$ 0.01 FLOT
       (-0.01) $\quad\quad$ (0.64) $\quad\quad$ (0.267) $\quad\quad$ (0.833)
       N = 121, $F_{7,113} = 12.34$, $R^2 = 0.40$

(2) M/B = -5.26 $+$ 0.01 AVSL $+$ 1.63 IND $+$ 0.003 AGE
       (-0.71) (8.84)** $\quad\quad$ (0.82) $\quad\quad$ (0.09)
       $+0.07$ REA $+$ 0.02 GRO $+$ 0.01 FLOT
       (0.74) $\quad\quad$ (0.15) $\quad\quad$ (0.70)
       N = 121, $F_{6,114} = 14.02$, $R^2 = 0.40$

**significant at 5% level (2 tailed test).

significantly related to the information content of Pefs variable INF or the signalling variables of retained equity (REA) and the advising agent summary variable (FLOT).[4] Furthermore, removal of the information content variable of the Pefs (INF) in equation 2 of Table 3 has little impact upon explanatory power as indicated by the change in the F statistic between equations 1 and 2 of Table 3.

The only variable that is significantly related to the market to book value of a company at flotation is the average sales divided by net assets (AVSL) variable. This indicates that past firm performance is the most important variable analysed in determining market capitalisation at flotation. The other risk measures (IND and AGE) are not significantly related to the dependent variable.[5]

The analysis is extended to consider whether the non-disclosure of a Pef affects the initial offer price of a new issue. Using all 194 companies (including the 73 that did not supply a Pef) the M/B dependent variable is regressed on a dummy variable, DF, given a value of zero if a company provided a Pef and a value of one if such information was not supplied; the results of this regression are shown in part (i) of Appendix III. The DF variable is insignificant and this suggests that companies which do not disclose Pefs do not, in general, indicate 'bad news' as far as the initial offer price is concerned. Therefore, the incidence of a Pef does not appear to affect strongly the offer price of the shares at flotation.

Traded Prices of New Issues

The final topic focuses upon the effect, if any, of Pefs upon share prices once active trading in the shares commences (after placement). Table 4 shows the results of regressing the DISC variable (see Appendix I for a description) upon the variable proxying for the information content of Pefs (INF) and other relevant explanatory variables listed in Appendix I.

Equation 1 shows that the measure of the information content of prospectus forecasts (INF) is strongly significant at the 5% level. All the other

[4]Flotation costs were used to measure advising agent quality because the individual advising agent variables, ACC and SPON, were correlated with the content (INF) variable and this could have led to a problem of multi-collinearity in the equation.

[5]Viewing the correlation matrix in Appendix II shows that the debt/equity variable (DEBT) is correlated with the AVSL variable. It is for this reason that the DEBT variable was excluded from the regressions in Table 3. When the DEBT variable was substituted in place of AVSL, the equations were found to lose considerable explanatory power. Consequently, company risk was measured using IND, AVSL and AGE rather than the DEBT variable.

Table 4
The Traded Price of New Issues

(1) $DISC = 3.34 + 0.11\,INF - 0.01\,AVSL - 2.28\,IND$
          $(0.01)\ (3.42)^{**}\ (-0.86)\qquad (-0.20)$
          $-0.24\,AGE + 2.09\,GRO + 0.44\,REA - 0.03\,FLOT$
          $(-1.20)\qquad (2.82)^{**}\qquad (0.84)\qquad (-0.39)$
          $N = 121,\quad F_{7,113} = 3.05,\quad \bar{R}^2 = 0.11$

(2) $DISC = -3.32 - 0.010\,AVSL - 3.32\,IND - 0.19\,AGE$
          $(-0.10)(-0.74)\qquad (-0.28)\qquad (-0.94)$
          $+1.87\,GRO + 0.58\,REA - 0.06\,FLOT$
          $(2.41)^{**}\quad (1.05)\qquad (-0.77)$
          $N = 121,\quad F_{6,114} = 1.47,\quad \bar{R}^2 = 0.02$

**significant at the 5% level (2 tailed test).

explanatory variables in the equation are insignificant with the exception of GRO which is positively signed and captures the growth of the USM market index over the two months preceding the new issue. Removal of the INF variable, retaining all the other explanatory variables (see equation 2), significantly reduces the explanatory power of the equation of demonstrates the significance of the relationship between DISC and the information content of Pefs.

The fact that the INF variable is positively signed indicates that the greater the information revealed by the Pef about future earnings, the greater the increase in traded prices of the shares of a company above the initial offer price. However, as is the case for the initial price results, the non-disclosure of a forecast does not seem to have any effect upon traded price (see part ii(a) of Appendix III for full results).

To determine if the non-significance of the disclosure/non-disclosure variable was due to the fact that disclosing firms did not have significantly better news to report than non-disclosing firms, a comparison of the ETR earnings forecast error (a measure of good or bad news forecastable from existing accounts) variable for disclosing and non-disclosing firms was made (see Appendix III, part ii(b)). Both sets of ETRs show a positive bias and a t-test indicates that there is not a significant difference in the means (this results is supported by a Wilcoxon Signed Ranks statistic). Furthermore, an examination of the accuracy of the ETRs across the two groups also indicates no significant difference.

These results suggest that in general terms, firms not disclosing a Pef are not in a weaker position relative to firms disclosing a Pef, as far as future earnings prospects are concerned. The reaction of both initial offer and traded prices in the USM shares would seem to confirm this. At a cursory level, the risk associated with past earnings (measured by a coefficient of variation) and the size of firms (measured by net assets) could be

important determinants of disclosure (see Imhoff, 1978 and Cox, 1985). The latter variable being a proxy for the availability of information, larger firms would be posited as being more 'open'. However, when t-tests were performed on these variables between disclosing and non-disclosing firms, no significant differences were noted.[6]

The results in Appendix III part ii reveal that the dependent DISC variable is significantly related to the level of retained equity. However, this variable was insignificant when only those firms who disclosed a Pef were considered (see Table 4). When considering only those firms that did not disclose a Pef (Appendix III, part iii) the retained equity variable is found to be significantly related to the traded price (DISC) variable. The positive coefficient on the REA variable suggests that as the percentage of retained equity held by the original owners increases, traded share prices increase relative to the share price at flotation. It could be argued that in the absence of a Pef the percentage of equity retained by the original owners serves as signal of future company value (Leland and Pyle, 1977). The signal may take on greater strength due to a lack of information relating to future earnings in the case of the 73 companies not disclosing forecasts.

Finally, although the signal of retained equity for firms not disclosing a Pef is found to be significantly related to traded price, no such evidence is found for the initial offer price of shares (see Appendix III, Part iii, equation 1).

Discussion and conclusion

This paper first considers the accuracy and bias of Pefs as compared to 'naive' time series forecasts.

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[6]Other t-tests were performed on the risk variables for firm age, industry sector, debt/equity ratios and for the length of forecast variable. No significant differences between the disclosing and non-disclosing firms were detected with respect to these variables.

The existing literature on this topic is inconclusive in its results. Some studies conclude that 'expert' prepared forecasts significantly out-predict time series model forecasts (Brown and Rozeff, 1978; Collins and Hopwood, 1980; Brown et al., 1973), while others have found expert forecasts to be no more accurate than time series forecasts (Cragg and Malkiel, 1968; Elton and Gruber, 1972; Ruland, 1978 and Imhoff and Pare, 1982).

The results presented here indicate that prospectus forecasts are no more biased and significantly more accurate than the 'time series' forecasts.

The information content of Pefs is defined as the difference between Pefs and a trend forecast from time series data, all divided by the trend forecast. The results obtained suggest that the information content of Pefs is negatively related to the quality of the advising agents responsible for auditing and ratifying the forecast. In other words, high quality agents present more conservative estimates of future earnings. No relationship is found to exist between the level of equity retained in a new issue by the original owners and the information content of a Pef.

The main body of the analysis considers the effect of Pefs on the initial and traded prices of new issues (unseasoned) on the USM in the UK. Prior work on the information content of management earnings forecasts has concentrated exclusively on seasoned (actively traded) issues. The majority of the existing literature on the information content of management earnings forecasts (e.g. Patell, 1976; Jaggi, 1978; Nichols and Tsay, 1979; and Penman, 1980) have only found an association between stock returns and 'good news' forecasts. However, using more refined analysis, in terms of 'good/bad' news definition and the timing of forecast release, Waymire (1984) found that abnormal returns are positively associated with the unexpected component of management forecasts in terms of both sign and magnitude. This finding—that earnings forecasts generally contain information—is supported in the present study, where the traded prices in the new USM shares are found to be positively related to the information content of Pefs. This is consistent with the view that the unexpected component of earnings forecasts is associated with abnormal returns (the return between traded and offer prices).

In contrast, the initial offer prices (placing prices) of the USM shares are not found to be related to the information content of Pefs. The evidence suggests, therefore, that the brokers with whom shares are 'placed' on flotation profit from the information content of the Pefs, buying the shares at the offer price and selling the shares once trading commences at a premium (the premium being an increasing function of the information content of the Pef).

Finally, firms not disclosing a Pef are examined. The results suggest that the earnings prospects of these firms are not significantly different to those firms disclosing a Pef. However, for those firms not issuing a Pef, the traded prices of the new shares are found to be positively related to the percentage of equity retained by the original owners. This result is not found for those firms disclosing a Pef. One possible explanation of this result is that in the absence of a Pef, other signals of firm valuation take on greater importance.

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Appendix I

Description of variables

EPR   Defined as actual earnings at the accounting year end following flotation less the earnings forecast contained in the prospectus, all divided by the prospectus earnings forecast.

ERW   Same definition as EPR, except replace forecast with RWALK: last available earnings figure before flotation.

ETR   Same definitions as EPR, except replace forecast with TREND. The TREND

forecast $= P_1 + (P_1 - P_3)/2$ where $P_1 =$ last reported earnings before flotation, $P_3 =$ reported earnings two years prior to P_1.

INF   Defined as the PEF forecast less an alternative forecast, all divided by the alternative forecast.

M/B   Defined as the ratio of the market capitalisation of the company at flotation to its book value at flotation.

DISC   This measures the discount between the issue price of a flotation and the traded price in the issue one week after flotation. The measure is adjusted for changes in the USM Datastream market index (see text).

SPON   A dummy variable according a value of 1 to a high quality sponsor and a value of 0 to a lower quality sponsor.

ACC   A dummy variable according a value of 1 to a Big 11 reporting accountant used at flotation and 0 for a non-Big 11 reporting accountant used.

FLOT   Flotation costs—hypothesised to be an increasing function of agent quality. (Trueman, 1986)

REA   The percentage of equity retained by the initial entrepreneurs/directors at the time of flotation.

AGE   The age of the company at the time of flotation expressed in years.

DEBT   The debt to equity ratio of the company at flotation, based upon book values.

AVSL   The average sales of the company over the 3 years preceding flotation divided by the average net assets over the 3 years.

IND   A dummy variable controlling for the industrial classification of a company. A value of 1 is used for companies in manufacturing, textiles or industrial groupings, and a value of 0 for companies in other sectors. Companies in manufacturing, textiles and industrials are viewed as having a higher risk of failure than companies in other sectors.

GRO   The growth in the USM Datastream market index over the 2 months immediately preceding the flotation.

DF   Dummy variable. A value of 0 is accorded to a company providing a prospectus earnings forecast and a value of 1 is assigned where such a forecast is not disclosed.

LF   The length of time, measured in months, elapsing between the flotation date and the next accounting year end following flotation.

Appendix II
Correlation Matrix

	INF	M/B	FLOT	REA	DEBT	AVSL	AGE	DISC	GRO	EPR	ETR	ERW	PEF	TREND
INF	1.00	0.09	−0.15	0.10	0.03	0.002	0.07	0.28	−0.10	−0.04	0.97	−0.51	−0.06	−0.01
M/B		1.00	0.14	0.06	0.60	0.65	0.07	0.03	−0.00	−0.02	0.13	0.09	−0.02	−0.09
FLOT			1.00	−0.14	0.33	0.14	−0.15	−0.08	0.01	0.03	−0.12	0.09	0.41	0.24
REA				1.00	−0.06	0.02	−0.04	0.10	−0.04	−0.37	0.08	0.03	0.26	0.15
DEBT					1.00	0.67	−0.04	−0.06	−0.04	0.01	0.05	0.06	0.02	−0.08
AVSL						1.00	−0.12	−0.07	−0.03	0.01	0.05	−0.06	−0.06	−0.02
AGE							1.00	−0.07	0.04	0.04	0.05	−0.08	−0.05	−0.01
DISC								1.00	0.21	−0.01	0.31	0.24	0.14	−0.18
GRO									1.00	0.11	−0.09	0.08	−0.09	−0.10
EPR										1.00	0.04	0.02	−0.13	−0.08
ETR											1.00	−0.43	−0.06	−0.01
ERW												1.00	0.06	−0.31
PEF													1.00	0.64
TREND														1.00

Appendix III (i)
Issue Prices and the Non-disclosure of Forecasts

(1) $M/B = -2.98 - 0.89\,DF + 0.01\,AVSL + 1.15\,IND - 0.01\,AGE$
         $(-0.59)(-0.65)\quad (11.9)^{**}\qquad (0.84)\qquad (-0.52)$
         $-0.03\,GRO + 0.05\,REA - 0.80\,SPON + 1.76\,ACC$
         $(-0.27)\qquad (0.80)\qquad (-0.60)\qquad (1.21)$
         $N = 194,\quad F_{8,185} = 18.57,\quad \bar{R}^2 = 0.42$

(2) $M/B = -4.69 - 0.86\,DF + 0.01\,AVSL + 1.10\,IND - 0.01\,AGE$
         $(-0.85)(-0.64)\quad (11.60)^{**}\qquad (0.82)\qquad (-0.40)$
         $-0.01\,GRO + 0.06\,REA + 0.01\,FLOT$
         $(-0.08)\qquad (0.95)\qquad (1.14)$
         $N = 194,\quad F_{7,186} = 21.20,\quad \bar{R}^2 = 0.42$

**significant at the 5% level (2 tailed test).

Appendix III (ii)
Traded Prices and the Non-disclosure of Forecasts

A
(1) $DISC = -9.70 - 5.33\,DF - 0.01\,AVSL - 0.58\,IND$
         $(-0.37)(-0.70)\quad (-0.94)\qquad (-0.10)$
         $-0.19\,AGE + 1.57\,GRO + 0.703\,REA - 9.90\,SPON$
         $(-1.20)\qquad (3.02)^{**}\quad (1.86)^{*}\qquad (-1.29)$
         $-14.50\,ACC$
         (1.60)
         $N = 194,\quad F_{8,185} = 2.11,\quad \bar{R}^2 = 0.08$

(2) $DISC = -11.78 - 7.72\,DF - 0.001\,AVSL - 3.28\,IND$
         $(-0.40)(-0.99)\quad (-0.76)\qquad (-0.43)$
         $-0.15\,AGE + 1.43\,GRO + 0.63\,REA - 0.04\,FLOT$
         $(-0.93)\qquad (2.75)^{**}\quad (1.66)^{*}\qquad (0.70)$
         $N = 194,\quad F_{7,186} = 1.77,\quad \bar{R}^2 = 0.06$

*significant at the 10% level (2 tailed test).
**significant at the 5% level (2 tailed test).

B
*A Comparison of the ETR Earnings Forecast Errors across Disclosing
and Non-disclosing Firms*

Firms Disclosing a Pef Cases = 121		*Firms not Disclosing a Pef* Cases = 73 (Difference Between Means)		
(Bias)	*ETR*	*Paired T-Tests*	*(Bias)*	*ETR*
ETR Mean	0.09		Mean	0.08
S Deviation	0.61	0.12	S Deviation	0.53
(Accuracy)			*(Accuracy)*	
Mean	0.38		Mean	0.34
S Deviation	0.49	0.60	S. Deviation	0.42

Appendix III (iii)
Initial Issue Prices and Traded Prices for Companies not Disclosing Forecasts

(1) $M/B = 0.31 + 0.11 \, AVSL + 0.07 \, IND - 0.08 \, AGE - 0.04 \, GRO$
          $(-0.05) \quad (8.05)** \qquad (0.05) \qquad (-1.62) \qquad (-0.35)$
          $+ 0.04 \, REA - 0.95 \, SPON + 1.36 \, ACC$
          $(0.411) \quad (-0.06) \qquad (0.75)$
      $N = 73, \quad F_{7,65} = 10.94, \quad \bar{R}^2 = 0.50$

(2) $DISC = -44.82 - 0.01 \, AVSL + 1.52 \, IND + 0.12 \, AGE$
          $(-1.60) \quad (0.07) \qquad (0.24) \qquad (0.65)$
          $+ 0.45 \, GRO + 0.79 \, REA - 2.98 \, SPON + 1.40 \, ACC$
          $(1.00) \qquad (2.22)** \quad (-0.47) \qquad (0.20)$
      $N = 73, \quad F_{7,65} = 1.00, \quad \bar{R}^2 = 0.09$

**significant at the 5% level (2 tailed test).

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Impact of Automation on Cost Accounting

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Abstract—Although production methods have been highly developed and now make use of very advanced technologies, management accounting systems have lagged behind. Before introducing new cost accounting systems, however, it is necessary to have a clear view of practice. The empirical results described in this paper constitute the output of a large scale research project into manufacturing companies located in Belgium. Extensive data on cost accounting systems were gathered through the use of a questionnaire. There is an indication that technological change has an impact on both cost composition and cost structure. The widespread hypothesis that the proportion of direct labour cost within total costs is lower in companies with automated production process is confirmed. As to the traceability of costs, there is a shift from indirect costs towards direct costs in companies with automated production. However, it appears that only a few companies are concerned about the efficiency of their cost calculation on a permanent basis. Moreover, no differences could be detected in the use of cost accounting in decision making between companies with automated production and those with mechanical production.

Introduction

Automation has become a major force in the rationalisation of the production process. Society is confronted with a technological evolution which occurs at an ever increasing pace. As a result, organisations experience significant changes in size, form, production process, labour process, organisation, etc. This dynamic environment and rapidly changing production technologies also have a substantial effect on the required information and control systems within firms (Burns and Stalker, 1961; Woodward, 1965).

Although production methods have been highly developed and make use of very advanced technologies, management accounting systems have lagged behind. Several authors have argued that traditional cost accounting techniques are not useful in a high-technological context (Cooper, 1989; Cooper and Kaplan, 1988; Kaplan, 1984). Management in a 'high tech' environment has different accounting information needs from that in the more traditional sectors. The challenge is to provide correct information in time, so that it is useful for planning and control purposes (Johnson and Kaplan, 1987).

Before introducing new cost accounting systems, however, it is necessary to have a clear view of practice. In this paper the results of an empirical

investigation on the actual use of accounting systems in a 'high tech' context are described.

Underlying theoretical and empirical research

A substantial body of literature related to management accounting has been published, but the number of articles based on empirical research is very limited (Kaplan, 1986). As to the effects of technology on management accounting systems, only a small number of empirical research articles has been written (e.g. Bruns and Waterhouse, 1975; Jones, 1985; Merchant, 1984). In addition, these research articles only focus on the changes in management accounting and do not attempt to provide an answer to questions related to the impact of technological change on management accounting.

Due to technological changes, both the structure and the composition of product costs have been changed substantially. Concerning product cost structure, the ratio of fixed costs to variable costs has increased (Chalos, 1986; Littrell, 1984) and many costs viewed as indirect costs in traditional companies are in fact direct costs in 'high tech' firms (Seed, 1984). Seed further argues that the neat parallels between 'direct' and 'variable', and 'indirect' and 'fixed' unravel in a 'high tech' environment.

Turning to product cost composition, most authors agree that direct labour costs have decreased and have often become insignificant (Bolwijn *et al.*, 1986; Chalos, 1986; Hunt *et al.*, 1985; Dilts & Russell, 1985; CAM-I Survey, 1988) while overheads (factory overhead, distribution costs, logistics costs) have become more important (Bolwijn *et al.*, 1986; Brimson, 1986; Bruns and Kaplan, 1987; Berliner and Brimson, 1988; Dilts

and Russell, 1985; Patell, 1987; Pyne, 1986; Schwarzbach, 1985). Some authors argue that cost accounting is the number one enemy of manufacturing performance and productivity (see e.g. Goldratt, 1983).

However, even in advanced technological environments where the use of expert systems can be anticipated, management accountants will be needed to develop 'data bases' and to communicate with the expert systems in order to retrieve useful information (Akers *et al.*, 1986; Preston, 1986). Howell and Soucy (1988) emphasise the key position of cost accountants in the new manufacturing environment provided that they are able to adapt the accounting system to the changed production environment. In order to identify the needs for new types of information, both management and cost accountants will have to get involved in operational decisions to become more familiar with the nature of the business in which they work (Maskell, 1986).

Empirical research

The empirical results described in this article constitute the output of a large scale research project conducted in industrial companies located in Belgium. Extensive data on cost accounting systems used in practice were gathered through the use of a questionnaire. For a description of the composition of the sample and the content of this questionnaire, see Kerremans *et al.* (1989). Of the completed questionnaires, 90 were acceptable for further use to investigate the impact of automation on cost accounting.

Classification of the Companies

In order to be able to distinguish between 'automated' and 'non-automated' companies, a problem had to be solved first: when is a company producing 'mechanically' and when is it producing 'automatically'? The switch from the first mode of operation to the second occurs gradually. In fact we are confronted with a continuum and the level of automation can vary across different activities such as procurement, production and distribution; moreover it can vary across sub-parts of produc-

Table 1
Number of companies in the sample

Total	Automated production	Mechanical production
90	31	59
100%	34%	66%

tion. Most companies can be positioned somewhere on the following axis:

100% mechanically 0% automatically	0% mechanically 100% automatically

The authors refrained from introducing a formal definition as to what constitutes an automated activity. Instead they decided to have this evaluation performed by the respondents themselves. They were asked to classify their company as 'predominantly mechanical' or 'predominantly automated'. This approximation has a methodological advantage, since this variable can be treated as a '0'–'1' variable. The authors recognise that there are methodological disadvantages as well: the possibility of a sub-optimal classification and a shift in the nature of the dependent variable from ordinal to nominal. However, three considerations seem to justify the proposed method. The participating companies completed a rather voluminous questionnaire. Given their voluntary participation, due care can be assumed. In addition, management is without any doubt better informed about the nature of their production processes than any outsider to the company. Last but not least, the literature provides no error-free classification scheme.

Different industries are represented in the sample (see appendix 1). The impact of the industry was tested. Even on a 1-digit level, no influence could be identified.

Survey of the cost accounting data

In order to find out how cost factors are processed in accounting systems, companies were asked whether they make a distinction between fixed

Table 2
Cost distinctions made by companies

	Classification of costs (*)					
Use of classification	Behaviour fixed–variable			Traceability direct–indirect		
	Total	Aut.	Mech.	Total	Aut.	Mech.
yes	83	87	81	83	81	85
no	17	13	19	17	19	15
	100	100	100	100	100	100

(*) expressed as a % of companies, but excluding missing values.

costs and variable costs (according to behaviour in relation to the production volume) and between direct costs and indirect costs (according to traceability). Thus the questionnaire included explicit definitions of the differences between fixed and variable costs and direct and indirect costs.

Table 2 shows that the majority of companies in our sample distinguish different types of cost. In practice, however, the implementation of a classification scheme may vary from firm to firm. A key role can be performed by management, although a technical analysis of the production process should in principle be predominant for the implementation of a classification system. Statistical analyses can also be used.

Some companies mentioned more than one possibility. Table 3 shows that management appears to perform the most important role in assessing the

Table 3
Implementation of cost classification schemes

| Implementation of classification scheme | Classification of costs (*) | | | | | |
| | Behaviour fixed–variable | | | Traceability direct–indirect | | |
	Total 74 = 100%	Aut. 26 = 100%	Mech. 48 = 100%	Total 70 = 100%	Aut. 25 = 100%	Mech. 45 = 100%
—judgment by management	76	81	73	74	80	71
—technical study of production process	53	54	52	53	48	56
—statistical analysis of historical data	32	27	35	34	40	31
—others	12	12	13	6	12	2

(*) expressed as a % of companies.

Table 4
Cost structure—totality of companies*

| | Direct costs | | Indirect costs | | Total | |
	Mean %	Std. dev.	Mean %	Std. dev.	Mean%	Std. dev.
Fixed costs	14.26	17.52	19.98	14.78	33.84	18.72
Variable costs	55.51	24.40	10.25	11.98	66.16	18.72
Total	69.30	20.07	30.70	20.07	100.00	

*Detailed information was given by only 51 companies, while totals were stated by 58 companies.

Table 5
Cost structure—companies with automated production*

| | Direct costs | | Indirect costs | | Total | |
	Mean %	Std. dev.	Mean %	Std. dev.	Mean %	Std. dev.
Fixed costs	19.75	20.02	16.69	10.98	35.62	17.72
Variable costs	58.63	21.94	4.94	6.12	64.38	17.72
Total	77.58	9.97	22.42	9.97	100.00	

*Details were stated by 16 companies, totals by 20 companies.

Table 6
Cost structure—companies with mechanical production*

| | Direct costs | | Indirect costs | | Total | |
	Mean %	Std. dev.	Mean %	Std. dev.	Mean %	Std. dev.
Fixed costs	11.74	15.94	21.49	16.14	32.84	19.43
Variable costs	54.09	25.62	12.69	13.24	67.16	19.43
Total	65.37	22.44	34.63	22.44	100.00	

*Details were stated by 35 companies, totals by 38 companies.

Figure 1
Cost structure for all, automated, and mechanical companies

Cost Structure
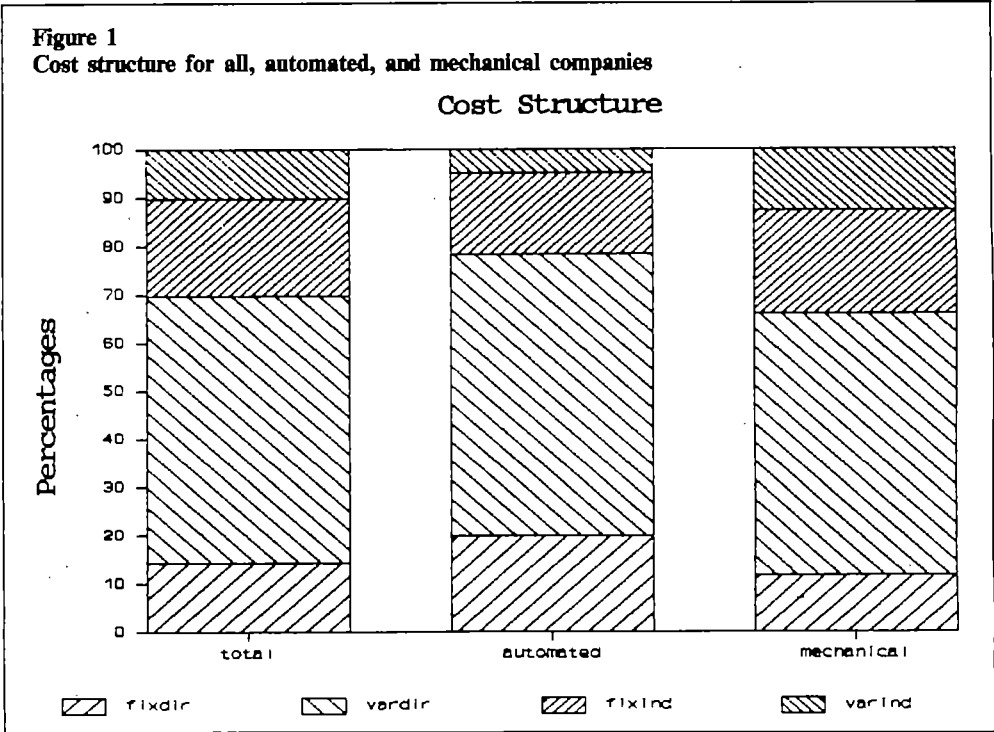
costs according to both behaviour and traceability, while a technical study of the production process ranks only second.

No real difference can be identified between the ways in which fixed costs are distinguished from variable costs and the ways in which direct costs are separated from indirect costs. To explore the cost structure, regarding behaviour and traceability, the following question was asked: 'what does the average structure of costs (in %) in your production look like?'

The results are shown in Tables 3 to 5. As far as indirect costs are concerned, the results are similar to those of Schwarzbach (1985) (a mean of 29, standard deviation 14). However, he did not specify the relationship between indirect costs and the degree of automation.

To gain a general overview and to identify some possible differences, these data are visualised in a barchart in Figure 1. At first sight, there seems to be a clear difference in cost structure between companies with automated production and those with mechanical production. Companies having

automated production seem to have more direct costs and fewer indirect costs, especially as far as fixed direct costs are concerned. Companies having mechanical production seem to have more indirect costs. T-tests were performed to test whether these differences are significant (see appendix 2). According to these tests only the difference in the proportion of total direct costs is significant (2-sided—0.01).

The relative importance of each component in the cost structure is different. In both cases direct variable costs are the most important. In companies with automated production, fixed direct costs (19.75%) and fixed indirect costs (16.69%) are respectively the second and third largest cost component, whereas in companies with mechanical production these are the fixed indirect costs (21.49%) and variable indirect costs (12.69%). In addition to this evidence, we emphasise that judgment of management is predominant in defining the cost structure (table 3) and that the issue of cost structure is also mentioned as one of the main problems in cost accounting (table 8).

Table 7
Composition of costs

	Totality		Aut. prod.		Mech. prod.	
	Mean %	Std. dev.	Mean %	Std. dev.	Mean %	Std. dev.
Materials	54.54	19.08	58.35	18.62	52.56	19.21
Direct labour	21.17	13.91	16.00	8.76	23.86	15.34
Energy	4.71	5.06	6.15	6.42	3.96	4.06
Others	19.58	13.82	19.50	14.59	19.62	14.54
Total	100.00		100.00		100.00	

Figure 2
Cost composition for all, automated, and mechanical companies
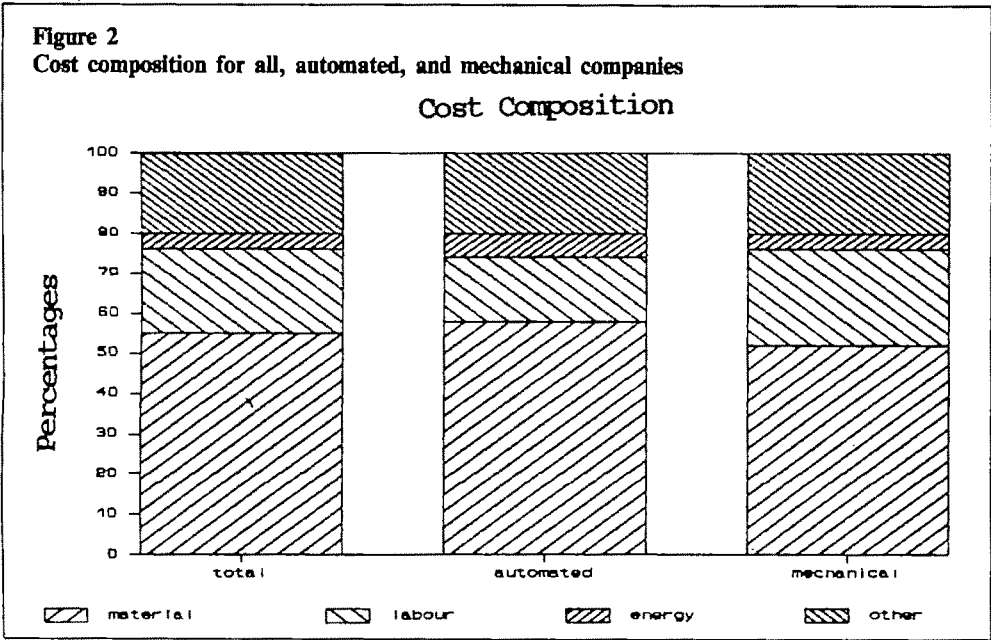
Cost composition

We also tried to decompose the costs into different categories: materials, direct labour, energy and others. In the literature such decomposition is often mentioned, but usually not linked to empirical research. However, in the CAM-I survey an average cost structure for 'advanced manufacturing' companies is stated: 12% direct labour, 55% direct materials and 33% overhead (CAM-I survey, 1988).

From the questionnaires we obtained very diverging data (see Table 7 and Figure 2), as seen by the high standard deviations. Moreover there were several missing values: 76 companies answered the question (50 mechanical production, 26 automated production).

From this information, the 'widespread' hypothesis that the proportion of direct labour cost within total costs is lower in companies with automated production process is confirmed. The consumption of materials and energy is relatively higher in the automated group. Overhead costs (others) are of (equal) importance.

Again, to test statistically whether these means are significantly different for companies with mechanical or automated production, t-tests were used. These showed that only the proportion of direct labour costs within total costs was significantly different at conventional significance levels ($p < 0.05$).

Concerns about cost accounting

In order to maintain their competitive position in a rapidly changing environment, it is important that companies should be concerned about their

Table 8
Major problems in cost accounting

Problems	% of companies			Mean rank		
	T 90 = 100%	A 31 = 100%	M 59 = 100%	T	A	M
—allocation	45	45	46	2.29	2.21	2.33
—information (internal)	38	46	34	2.12	2.36	1.95
—cost structure	37	42	34	2.33	2.00	2.55
—quantification of cost elements	31	25	34	2.00	1.25	2.20
—inflation	19	9	23	2.35	2.33	2.36
—standard setting	15	9	18	2.29	1.67	2.45
—modification of production process	9	6	11	1.88	1.50	2.00
—cost of waste	8	6	11	3.38	3.00	3.50
—selling price	4	0	7	2.50	—	2.50

T = totality of companies
A = companies with automated production
M = companies with mechanical production

The number represents the % of companies mentioning the problem (regardless of the ranking).

cost calculations on a permanent basis. Few companies, however, seem to be concerned about the efficiency of these calculations. Only 33% of the companies reconsider their cost calculation system regularly (most of them yearly); 32% reconsider it occasionally. The introduction of new products or new methods of production are the main motives for reconsidering cost calculation schemes. Less frequently the introduction of a computer, or the availability of new software, are mentioned. The role of the cost accountant appears to be a minor one. There are no major differences between the two groups of firms.

As to the frequency of cost calculation, real costs are mostly calculated every month (or even every week). Approximately 60% of the companies use standard costs. Although standard costing is often found to be redundant in high-tech environments (Maskell, 1986), no clear difference is detected between companies with mechanical or automated production. Standards are mostly fixed on a yearly basis in both groups.

Problems in cost accounting

In general, management accountants in industry agree that their current cost accounting systems are inadequate for today's and tomorrow's environment (Johnson and Kaplan, 1987). As an answer to an open-ended question, 5 major problems could be mentioned and ranked. Several problems were mentioned, clustering around the items shown in Table 8.

From Table 8, the major problems can be situated in the areas of internal information, allocation, quantification and cost structure. In the automated group cost allocation and cost structure remain dominant; those firms that have indicated quantification do so as the first or second problem. Not many problems seem to be solved by automation, except for the inflation problem. The allocation problem is also stated as one of the main problems in a

UK survey performed by a consulting group (CAM-I, 1988).

In order to gain insights into the importance of each problem within a company for the different groups, the mean rank of the problem was calculated. The most important problem ranks 1, the least ranks 5. The mean ranks have to be interpreted in correlation with the percentage of companies mentioning the problem. The modification of the production process has the lowest rank (between first and second problem), but is only relevant for a small number of companies, while cost allocation and internal information have a higher rank, but are relevant for a considerable number of companies.

As far as cost allocation problems are concerned, it appears that in many companies there are doubts about the suitability of the allocation bases used. A refined calculation based upon a wrongly chosen allocation is indeed useless. Many companies mention that they have a wide variety of products and that cost allocation is very time consuming, while the suitable computer programs are often missing. In many companies there is lack of a clear view of cost drivers.

The second problem seems to be an information gap between the production and the administrative departments. The adaptation of cost allocation to the real production process and the design of cost calculation schemes (including schedules that state where costs occur and how they should be treated) by a team (e.g. a cost accountant, a production engineer and a computer specialist) are possible solutions to this kind of problem.

Problems related to the cost structure refer primarily to the issues discussed in the above section on cost behaviour and cost traceability. In many firms the distinction between fixed costs and variable costs, direct costs and indirect costs is difficult.

The quantification of cost elements is a problem for several companies: the measurement of raw materials used raises many difficulties; the measurement of labour seems to be easier. The problems

Table 9
Importance of cost information to management

	Total		Automated		Mechanical	
Events	Mean score	Std. dev.	Mean score	Std. dev.	Mean score	Std. dev.
—valuation of inventories	4.33	1.05	4.23	1.17	4.39	0.98
—price setting	4.00	1.01	4.10	0.98	3.95	1.03
—evaluation of efficiency of managers	3.77	1.15	3.90	1.24	3.71	1.12
—sales strategy	3.72	1.02	3.68	1.05	3.74	1.02
—investment decision	3.56	1.24	3.65	1.33	3.52	1.20
—evaluation of efficiency of production process	3.20	1.17	3.10	1.11	3.26	1.21
—production strategy	2.72	1.22	2.61	1.17	2.77	1.25
Minimum no. of cases	82		29		53	

related to inflation, changes in the production process and standards all have a common characteristic: late adaptation of the calculations to the changed situation. Lack of information is again the main reason.

Cost accounting and management

According to Kaplan (1988) cost accounting systems need to address three different functions: inventory valuation, operational control and individual product cost measurement. How important and how different the demands of these three functions are depends heavily on management. Management can attach more or less importance to cost elements for its decision making. Functions were given in the questionnaires; the companies assessed the importance of cost accounting for these functions using the following scale:

1 = superfluous,
2 = less relevant,
3 = relevant,
4 = very relevant,
5 = indispensable.

This means that for all events ranking more than 3, cost information is relevant. The results are shown in Table 9.

In general, a majority of companies consider cost information to be relevant for all the events considered except for the production strategy. For the totality of the companies, cost information is most relevant (several companies marking it as indispensable) for the valuation of inventories and for price setting. The least attention seems to be paid to costs in relation to production strategy and the evaluation of the efficiency of a production process.

The same conclusion can be drawn for both groups of firms (with a slight difference in sequence). The evaluation of inventories seems to be slightly more important to companies with a traditional production process. For price setting purposes and the evaluation of the efficiency of managers, companies with automated production processes seem to attach more importance to cost elements.

The fact that for some management decisions cost information is marked as less relevant does not mean that it is superfluous, but that another type of information is available which is evaluated as more important and more representative of managerial performance such as personal interaction in the organisation, subjective observations, personal record keeping and managerial behaviour (Preston, 1986).

Conclusion

Our empirical findings indicate that technological change has an impact on both cost composition

and cost structure. The proportion of direct labour costs within total costs in automated companies is significantly lower as compared to companies with mechanical production. As to the traceability of costs, there is a shift from indirect costs towards direct costs in companies with automated production. However, overhead costs were not found to be significantly higher in 'automated' companies. Furthermore, our findings illustrate that the classification of costs into various types is primarily done by management, while the use of a technical study of the production process is ranked second. This applies to both groups of companies.

The consideration that standard costing is less useful in 'high-tech' companies was not confirmed by our research data. Moreover, it appears that only few companies are concerned about the efficiency of their cost calculations on a permanent basis. As to the problems with cost accounting in general, both automated and mechanically producing companies have difficulties with cost allocations, internal information and cost structure, which are more or less interrelated problems. The findings also suggest that 'automated' companies face fewer problems with the quantification of cost elements. Finally, no differences, could be detected in the use of cost accounting in decision making between the two groups of companies

Due to possible biases (e.g. subjective classification of companies into automated and non-automated companies, status of the person who completed the questionnaire) it should be emphasised that, although these empirical findings are highly consistent with the underlying theoretical and empirical research, the results should be interpreted with care.

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Appendix 1

Composition of the sample (NACE—codes)

All companies

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Energy and water	1.00	3	3.3	3.3	3.3
Chemical industry	2.00	17	18.9	18.9	22.2
Metal manufacture	3.00	21	23.3	23.3	45.6
Other manufacturing inds	4.00	44	48.9	48.9	94.4
Building/civil engineering	5.00	3	3.3	3.3	97.8
Transport/communication	7.00	1	1.1	1.1	98.9
Business services	8.00	1	1.1	1.1	100.0
TOTAL		90	100.0	100.0	

Valid Cases   90   Missing cases   0

Companies with automated production processes

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Energy and water	1.00	2	6.5	6.5	6.5
Chemical industry	2.00	10	32.3	32.3	38.7
Metal manufacture	3.00	3	9.7	9.7	48.4
Other manufacturing inds	4.00	15	48.4	48.4	96.8
Business services	8.00	1	3.2	3.2	100.0
TOTAL		31	100.0	100.0	

Valid Cases   31   Missing Cases   0

Appendix 1—*continued*

Composition of the sample (NACE—codes)

Companies with mechanical production processes

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Energy and water	1.00	1	1.7	1.7	1.7
Chemical industry	2.00	7	11.9	11.9	13.6
Metal manufacture	3.00	18	30.5	30.5	44.1
Other manufacturing inds	4.00	29	49.2	49.2	93.2
Building/civil engineering	5.00	3	5.1	5.1	98.3
Transport/communication	7.00	1	1.7	1.7	100.0
TOTAL		59	100.0	100.0	

Valid Cases   59   Missing Cases   0

Appendix 2

T-tests results

Composition of costs

Mean	Mechanical	Automated	Statistical significance
Materials	52.56% (13.21%)	58.35% (18.62%)	0.21
Direct labour	23.86% (15.34%)	16.00% (8.76%)	0.01
Energy	3.96% (4.06%)	6.15% (6.42%)	0.12
Others	19.62% (14.54%)	19.50% (14.59%)	0.87
Total	100%	100%	

Traceability of costs

Mean	Mechanical	Automated	Statistical significance
Direct costs	66.37% (22.44%)	77.58% (9.97%)	0.01
Indirect costs	34.62% (22.44%)	22.42% (9.97%)	0.01
Total	100%	100%	

( ): Parentheses enclose standard deviations.

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Contents

Attitudes Towards the Term 'Generally Accepted Accounting Principles'

John E. McEnroe*

Abstract—The above term has existed in the United States accounting literature since the 1930s, and in general attempts to convey the accounting practices that are accepted as satisfactory by a significant number of recognised accountants. However, the term has been frequently criticised as nebulous and inadequate. Accordingly, this research attempted to determine if parties sophisticated in accounting matters would prefer an alternative term. Financial analysts, certified public accountants (public and private) and accounting academicians were polled as to their preferences. The questionnaire listed twenty potential phrases. The respondent was asked to list his or her agreement as to the appropriateness of each term as a potential alternative to the phrase 'generally accepted accounting principles'. The results indicated a clear preference for the retention of the term.

Principle, n. 1. an accepted or professed rule of action or conduct. **2.** a basic law, axiom, or doctrine. *The Random House College Dictionary*

There is perhaps no term in accounting's lexicon that is either less understood or used out of context more frequently than 'generally accepted accounting principles' (GAAP). As an example, in an article in the *Chicago Tribune* describing the perceptions of an audit's accuracy, even the author, a financial reporter, erred in regard to the composition of the phrase, referring to it as 'generally accepted accounting practices' (Gaines, 1985, p. 3).

In fact, even though the term has been used in US audit reports since 1939, the Wheat Committee decided to replace the word 'principles' with 'standards' when they directed the 1973 transition of the Accounting Principles Board (APB) to the Financial Accounting Standards Board (FASB). The Committee based its decision on a study of APB pronouncements and concluded that the majority of the promulgations had little to do with 'principles' as the word is normally understood (Solomons, 1986, p. 41).

The lack of consensus, even among accountants, as to what generally accepted accounting principles actually consist of, or whether an official or de facto taxonomy can be found, further compounds the problem. For example, Statement No. 4 (AICPA, 1970, par. 138) 'Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises', while not an 'authoritative' promulgation of the American Institute of Certified Public Accountants (AICPA), states that the term is technical in nature and encompasses 'the conventions, rules, and procedures necessary to define accepted accounting

practice at a particular time'. However, the statement acknowledges that since these principles embody a consensus, they depend upon notions such as general acceptance and substantial authoritative support, which are not precisely defined.

Statement No. 4 lists several sources of generally accepted accounting principles, but emphasises that 'No comprehensive authoritative list of detailed accounting principles is presently available'. The various sources cited are as follows: the Opinions of the Accounting Principles Board,[1] the Securities and Exchange Commission, actual accounting and reporting practices in areas not covered by APB Opinions, publications of professional organisations, surveys of predominant or preferred accounting practices, accounting textbooks, and other accounting writings (paras. 204–205).

Statement on Auditing Standards No. 52 (SAS 52), on the other hand, also states that '...the determination that a particular accounting principle is generally accepted may be difficult because no single reference source exists for all such principles' (AICPA, 1990, Section 411.05). The Statement goes on to cite the sources of generally accepted accounting principles as: pronouncements of an authoritative body designated by the AICPA Council to establish accounting principles pursuant to Rule 203 of the AICPA Code of Professional Conduct, pronouncements of bodies composed of expert accountants that follow a due process procedure... for the intended purpose of establishing accounting principles or describing existing practices that are generally accepted, those that represent prevalent practice in a particular industry or the knowledgeable application to

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[1] The Financial Accounting Standards Board was not in existence at the time Statement No. 4 was issued (1970).

specific circumstances of pronouncements that are generally accepted, or other accounting literature.

Thus, a plethora of sources is cited within the two pronouncements. The problem, unfortunately, is that Statement No. 4 is not very specific in precisely defining what a generally accepted accounting principle is, or how it is found within these sources. Furthermore SAS 52, although an improvement over Statement No. 4, still represents a wide and somewhat ambiguous range of sources. Perhaps Mautz (1983, p. 3) best exemplifies the spirit of GAAP. He states that although the term has been used by accountants since the 1930s, and is thus deeply embedded in the accounting literature, 'Its meaning is not well defined, but the phrase is generally interpreted to include those accounting practices accepted as satisfactory by a significant number of recognized accountants'.

Historical perspective—United States

A review of the accounting literature revealed little evidence of the term GAAP being used in the early 1930s. Zeff (1971, p. 123) cites an early reference to a variation of the term by George O. May, the former senior partner of Price Waterhouse & Co. In a letter written in 1932 to the Committee on Stock List of the New York Stock Exchange, May attached an appendix that contained a list of five 'broad principles of accounting which have won fairly general acceptance'. May proposed that within the limits of those principles, corporations would have the right 'to select detailed methods of accounting deemed by them to be best adapted to the requirements of their business' (p. 123). However, the term was not embodied in the authoritative literature at that time, and the standard audit report read in part (Byrne, 1937, p. 367):

> In our opinion ... the accompanying balance sheet and statement of income and surplus fairly present in accordance with accepted principles of accounting consistently maintained by the company during the year under review ....

Indeed, there was frequent debate in the 1930s as to the exact definition of accounting principles, or whether they even existed. For example, Broad (1937) maintained that although principles in general remain the same, there are differences of opinion as to the body of accounting rules, practices, and conventions that are derived from those principles. In contrast, Byerly (1937, p. 94) did not appear to be optimistic regarding the development of a set of general principles:

> ... there seems to be a general agreement among the commentators that the difficulty of any attempt to formulate so-called principles or prescribed rules and regulations on accounting matters is that the field is so large and the

conditions encountered so diverse that few, if any, sweeping generalizations can be adopted.

Blough (1937, p. 31) alluded to the difficulty of the interpretation of the term 'generally accepted accounting principles' by stating:

> A principle in some fields of knowledge is a fundamental concept universally accepted by persons in the particular field; in others it may be considered as a rule of action. When we modify principle by the words 'generally accepted', there is an inference that there may be principles not generally accepted.

Despite this continued debate by the forementioned and other writers of the period, the American Institute of Accountants on May 9, 1939 adopted a standard form of accountants' report which included the term 'generally accepted accounting principles':[2]

> In our opinion, the accompanying balance sheet and related statement of income and surplus present fairly the position of—at—and the results of its operations for the fiscal year, and conform to generally accepted accounting principles applied on a basis consistent with the preceding year.

Thus, the phrase 'generally accepted accounting principles applied on a basis consistent with the preceding year' replaced 'accepted accounting principles maintained by the company during the year' which had been used for many years. This 1939 report, with a few exceptions, served as the basis for the standard audit report that was used from that period until the introduction of the expanded version prescribed by SAS 58 (which still contains the phrase 'generally accepted accounting principles').

International perspective

Although the discussion thus far has been restricted to the development and role of GAAP in the US, accounting principles are, of course, an integral part of financial reporting practices of many other countries. It might therefore be useful to describe briefly their nature and origin in the financial reporting systems of some other nations. For the purpose of this exercise, five diverse countries were selected: the United

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[2]According to Zeff (1971, p. 129) probably the first American Institute publication in which the term GAAP appeared was *Examination of Financial Statements by Independent Public Accountants* (New York: American Institute of Accountants, 1936) p. 389.

[3]It is interesting to note that due to the accounting and economic significance of three of these countries (the UK, the Netherlands, and Germany), their cooperation in the harmonisation of financial reporting is considered to be 'vital' by Mason (1978, p. 77) and also by Nobes and Parker (1991, p. 10).

Kingdom, Norway, Sweden, the Netherlands, and Germany.[3]

Carsberg (1985, p. 23) asserts that an important difference between a US audit opinion and one originating in the United Kingdom stems from two key phrases in the respective reports. US audit opinions state that the financial statements 'present fairly... in conformity with generally accepted accounting principles', while UK audit reports declare that 'The accounts give a true and fair view'. Accordingly, Carsberg feels that the reference to GAAP may indicate a greater dependence in the US on authoritative pronouncements than in the UK in the formulation of financial statements. However, this does not mean to suggest that accounting standards and rules can be ignored by British companies, for the 1985 Companies Act describes the basic framework to be utilised for the form and content of UK companies' accounts, while the accounting standards to be followed have been developed by the Accounting Standards Committee (ASC) (replaced in 1990 by the Accounting Standards Board).

In Norway, two major accounting acts exist that prescribe financial reporting requirements: the Accounting Act of 1977 and the Companies Act of 1976. Although formal financial statement requirements are regarded as minimal (OECD, 1986, p. 64) financial reporting is guided by the general directive in the law that the accounts have to be formulated in accordance with 'good accounting practice'. This implies that more information may be required to be disclosed than is required by the minimum requirements of the Accounting Act, depending on the entity's nature, size, and other variables. As in the case of Britain, the process would seem to involve less reliance on detailed rules than in the US.

Sweden also has an Accounting Act (1976), which contains bookkeeping, technical, and valuation rules, as well as formats to be employed for financial reporting. As in the case of Norway, the obligation is to maintain the accounts in accordance with 'good accounting practice' as opposed to GAAP. However, as in the case of US GAAP, the concept is not well defined, for as the head of the Swedish Accounting Standards Board has stated, 'There has thus been and still is, a need for elucidation as to what exactly is meant by "good accounting practice"' (OECD, 1986, p. 67).

In the Netherlands, the phrase 'generally acceptable accounting principles' is used (Nobes and Parker, 1991, p. 219). Guidance for the determination as to what constitutes generally acceptable accounting principles is found in the guidelines published by the Council for Annual Reporting (p. 135). However, neither companies nor their auditors are required to follow these guidelines and there is no obligation to state that they have been followed. Hence, it follows that financial reporting is again more flexible than under the US GAAP system.

A final contrast is provided by the financial reporting system in Germany. In this country, Section 38 of the Commercial Code obligates companies to report their results of operation in accordance with 'principles of orderly bookkeeping'. The three main sources of these requirements are company, commercial and tax laws and regulations, although the most important rules that pertain to the form and content of annual accounts and of the annual reports are contained in the Accounting Directives Law of 1985. Furthermore, despite their importance, there is no formally agreed procedure for either the assessment or establishment of these accounting principles. A purported advantage of this financial reporting system is that the principles are supple in nature in that they permit different accounting procedures to exist side by side, and thus leave room for discretion by the financial statement preparer. A perceived disadvantage is that, due to various theoretical differences of opinion, the principles are often very difficult to establish, which in turn leads to litigation until a decision by a Federal Supreme Court (usually the Finance Court) is established (OECD, 1986, p. 59).

Thus, for the most part, the nature and role of accounting principles within these countries can be argued to create a more adaptable reporting system than under US GAAP. However, this flexibility, coupled with international differences, can attenuate comparability for entities operating in these countries. In fact, according to some observers, including an international accounting firm, this international accounting diversity and the absence of a global database in which company accounts are restated to US GAAP or some international GAAP prevents some individuals from investing in international securities: 'The fact remains that a lot of people remain leery of international securities, despite predictions that harmonized standards will not only make analysts' lives a little easier but also enlarge investor interest' (Arthur Andersen, 1990, p. 5).

The question arises then as to whether US GAAP would be optimal for international reporting, and might one day be universally adopted on a multinational basis. Although the debate is beyond the scope of this paper, according to Violet (1983, p. 2) this will not occur. His thesis is that US GAAP are developed 'pragmatically' in that they are formulated on a trial and error basis according to the situation. Hence, he argues that, since the results are derived from a specific culture, the accounting principles are incapable of evolving into International Accounting Standards (IAS) and are thus limited in their application:

American accountants have begun to realize the perceptual effects and behavioral limitations

generated by generally accepted accounting principles (GAAP). As the American system transcends national borders into the complex international environment, the utility of GAAP greatly decreases. IAS are a necessity for multinational reporting of international transactions (p. 2).

Nobes and Parker (1991, p. 8) appear to agree, for they state that although the solutions (GAAP) offered by US accountants to some accounting problems have been influential, they have not always been accepted. The authors even state that one argument offered for international harmonisation has been to prevent the wholesale adoption of US GAAP.

Given this background involving the nature and origin of accounting principles in the financial reporting systems of these different countries, the objective of this research was to determine if perhaps various parties in the US who are sophisticated in accounting matters would prefer an alternative term to be employed in lieu of 'generally accepted accounting principles'. Since there has been evidence of criticism of the term, alternative phrases were listed on the research instrument in an effort to determine if a new term should perhaps be substituted.

Research methodology

A list of alternative terms, listed alphabetically in Table 1, was sent to the following: (1) CPAs engaged in public accounting, (2) CPAs working in private industry, (3) accounting academics, and (4) financial analysts. A total of 300 questionnaires was sent to a random sample of each of the four groups, for a total mailing of 1200. A list of nineteen alternative terms was developed from an inventory solicited from a panel of accounting academics and practitioners. Each of the terms that is listed in Table 1 was included on the instrument, with the possible values ranging from 9 (Very Appropriate) to 1 (Very Inappropriate). The value 5 was identified as representing a neutral posture. Specifically, the respondent was asked to indicate his or her preference for a particular phrase as a possible alternative to the term 'generally accepted accounting principles'. The respondent was further instructed that the term 'generally accepted accounting principles' was also included in the set of phrases to allow him or her to indicate satisfaction with it. As a brief definition, the phrase was said to be intended to 'connote the common set of standards and procedures upon which financial results of operations are reported and that are presently referred to as "generally accepted accounting principles"'.

Discussion of results

The number of responses and response percentages, as listed in Table 1, are respectively: (1) CPA-Public, 79-26% (2) CPA-Industry, 72-24%; (3) Accounting Academician, 96-31%; and (4) Financial Analyst, 47-16%. A common problem associated with mail surveys is that of potential non-response bias. Various techniques have been suggested in the psychometric literature (e.g. Kanuk and Berenson, 1975; Hawkins, 1975) to measure the extent of non-response bias. In the current study, potential non-response bias was tested through the 'wave analysis' technique: the responses of individuals received after a certain cutoff date were compared (by population and item) to those received before that date, and none indicated a difference at the .05 level. Thus, there was no evidence to conclude that non-response bias imposes a serious constraint on the validity of the findings.

A review of the data indicates that the phrase that achieved the highest rating among the twenty was the one presently used, 'generally accepted accounting principles'. In fact, the overall mean score for all four groups was 7.38, out of a possible high score of 9. Furthermore, although there was a significant difference in the perceived desirability of this term among certain groups, it still was evaluated as the best phrase by *all four groups*.

The second highest overall mean (5.26) was obtained by the term 'financial accounting standards'. Again, this phrase represented the second choice for each of the four groups. Furthermore, there was no significant difference in the mean scores among the four groups. One possible explanation why this term obtains the second highest score is that the Financial Accounting Standards Board (FASB) issues official promulgations that it refers to as 'financial accounting standards'. This term was followed by the third most popular, 'financial accounting principles' (5.02), which was, in turn, slightly higher than 'established accounting principles' (4.96), the number four choice. Last, the fifth most popular term (overall mean—4.83) was 'accounting standards'. It should be noted, however, that rankings two through five had a score which was very close to neutral, with a range of 5.26 to 4.83.

While the reader may wish to peruse the scores of rankings 6–19, it is beyond the scope of this paper to comment on each phrase in this range. It should be noted that the scores of the overall means are fairly consistent, however, within a somewhat tight range, with a high score of 4.52 for the number six ranking, 'accounting principles', to 3.02 for the nineteenth ranking, 'financial accounting statements'. Lastly, the least preferred phrase was 'financial accounting assumptions', with an overall mean of 2.51. Again, the rankings were

Table 1
Mean Scores and Results of One Way ANOVA

Term	Rank	All Groups	CPA-Public	CPA-Industry	Accounting Academic	Financial Analyst	F Ratio	F Probability
1. Accounting Concepts	18	3.10	3.31	3.01	3.33	2.40	2.15	0.09
2. Accounting Principles	6	4.52	4.84	4.68	4.35	4.06	1.26	0.28
3. Accounting Procedures	15	3.34	3.63	2.87	3.36	3.51	1.57	0.19
4. Accounting Reporting Rules	13	3.58	3.64	3.41	3.47	3.95	0.61	0.60
5. Accounting Rules	17	3.23	3.39	3.01	3.20	3.35	0.44	0.72
6. Accounting Standards	5	4.83	4.81	4.70	4.82	5.08	0.26	0.85
7. Established Accounting Principles	4	4.96	5.12	5.07	4.75	4.97	0.40	0.75
8. Financial Accounting Assumptions	20	2.51	2.63	2.36	2.69	2.19	1.06	0.36
9. Financial Accounting Concepts	14	3.36	3.93*	3.07	3.52	2.52*	5.04	0.002
10. Financial Accounting Principles	3	5.02	5.28	5.27	4.80	4.66	1.23	0.29
11. Financial Accounting Procedures	12	3.61	3.87	3.21	3.61	3.78	1.25	0.29
12. Financial Accounting Requirements	11	3.66	3.82	2.05	2.20	2.19	0.65	0.58
13. Financial Accounting Rules	10	3.73	3.87	3.35	3.84	3.86	0.87	0.45
14. Financial Accounting Standards	2	5.26	5.38	5.09	5.32	5.16	0.23	0.87
15. Financial Accounting Statements	19	3.02	3.19	2.97	2.89	3.13	0.35	0.78
16. Generally Accepted Accounting Principles**	1	7.38	7.93	7.87	6.95	6.57	7.49	0.0001
17. Generally Accepted Accounting Procedures	7	4.43	4.44	4.26	4.17	5.14	1.67	0.17
18. Generally Accepted Accounting Theories	16	3.30	3.88*	3.52	2.70*	3.23	4.39	0.004
19. Technical Standards of Financial Accounting	8	4.27	4.59	4.30	4.06	4.14	0.70	0.54
20. Rules and Regulations of Accounting Practice	9	3.81	3.43	3.69	3.82	4.62	2.17	0.09
Number of Usable Responses			79	72	96	47		
Response Percentage			26%	24%	32%	16%		

*Significant difference at the .05 level.
**Significant difference exists at the .05 level between the following groups: CPA-Public and Accounting Academics, Financial Analysts. CPA-Industry and Accounting Academics, Financial Analysts.

consistent, for this term achieved the lowest preference for all four of the groups.

There are two points that are evident from the data analysis. First, the term used presently, 'generally accepted accounting principles', was by far the preferred phrase by all four of the groups investigated. Its overall mean (7.38) was over 2 points higher than the second choice. Indeed, an analysis employing 95 per cent confidence intervals (not depicted) indicates no other score reaching the value 6 (the high score per this analysis was 'financial accounting standards': 5.94). Thus, despite the criticism of the present term, respondents overwhelmingly desire to retain it. Second, there was a high degree of consensus regarding the appropriateness of each of the items. For example, a significant difference among the four groups existed in only three of the twenty rankings. Concomitantly, there was, in general, close agreement regarding the perceptions of the various phrases among the populations.

Conclusions

This research has found that parties knowledgeable in accounting matters (CPAs employed in both public accounting and industry, accounting academicians, and financial analysts) prefer the retention of the term 'generally accepted accounting principles' to connote the rules under which financial statements are formulated. The results clearly indicate that this was the overwhelming choice of the twenty items listed in the survey instrument. An implication of the study is that despite the criticism of the term, it is indeed regarded as the appropriate phrase to represent its underlying definition. The research also implies that perhaps more efforts should be undertaken to educate individuals as to the term's intended meaning rather than towards developing a substitute phrase.

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Aristocratic Accounting: the Bute Estate in Glamorgan 1814–1880

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Abstract—The aristocracy played a significant role in the development of the British economy in the first half of the nineteenth century, not only as the owners of most of the agricultural land but also as promoters of urban development, transportation links and mineral extraction. One of the most important aristocratic families was that of the Marquesses of Bute, who made a crucial contribution to the development of the city and port of Cardiff and the South Wales coal industry. During this period, however, the Butes seldom lived on their Glamorgan estate, and they thus had to institute systems whereby the estate could be managed at a distance. This paper examines the accounting information used to manage a large aristocratic estate, and considers its relevance in the light of the economic, political and social objectives of the nineteenth century British aristocracy.

The British aristocracy has held a great fascination for economic and social historians (the most recent example being the major survey of the aristocracy in decline by Cannadine, 1990). The significant contribution of the aristocracy to Britain's economic development has been widely examined, through general surveys (the most recent being Beckett, 1986, and Stone and Stone, 1986) and case studies of particular aristocratic families. The primary source material for these studies lies in the extensive archives of aristocratic estates, consisting of legal documents, correspondence and accounting records. However, while historians have readily drawn on evidence from estate accounts, they have rarely provided detailed descriptions of the accounts themselves (Napier, 1989, surveys the use of estate accounts by historians as sources of evidence). Thus the accounting historian must return to the primary estate archives in order to obtain a clear understanding of the form and content of estate accounts and their use in the management of the aristocratic estate.

In this paper, the accounting records of one estate are studied in detail; those relating to the Glamorgan estates of the Marquesses of Bute, during the period 1814–1880.[1] This estate was selected for three reasons. First, the Marquesses of Bute were among the most economically significant

aristocrats of the nineteenth century. Second, their Glamorgan estate has been the subject of a detailed book-length study (Davies, 1981), as well as several studies of specific aspects of the estate (for example, Daunton, 1975). These use the estate accounts as sources of data, but do not describe or analyse them in detail. Third, the estate generated income from a wide range of activities (farm rents, mineral royalties, transport facilities and urban development), which were important sources of revenue for the aristocracy, but rarely occurred together on the same estate.

The first section of the paper discusses estate management and accounts in general terms, and is followed by a section describing the Bute estate in more detail. The next two sections examine the estate accounts in the periods 1814–1848 and 1848–1880 respectively. The final section considers the contribution made by accounting to the economic management of the estate.

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[1]The original records on which this paper is based are in the Bute collection at the National Library of Wales, Aberystwyth (NLW), and in the Bute papers at Cardiff Central Library (CCL). The NLW papers (which cover mainly the period up to the death of the 2nd Marquess in 1848) are kept in many large boxes, of which the most important for this paper are Box 60 (monthly and annual estate accounts), Boxes 64 and 74 (estate rentals and miscellaneous accounts), and Box 70 (Letter Books consisting of copies of correspondence to and from Bute's bankers, lawyers and agents in London and Wales). In the CCL collection, the most important source is Box X (annual estate accounts for the periods 1848 to 1858 and 1866 to 1880, and sets of expense vouchers for the years 1829 to 1834). Other relevant documents in CCL are MS4.713/1-4 (Letter Books of E. P. Richards), MS4.850 (notes on the survey of the Bute mineral properties carried out by David Stewart in 1823), and MS4.937 (estate accounts for 1858 to 1870). The documents in each box are not normally further classified, and general references to box numbers are not provided in this paper, as the location of material quoted can be determined from the information above.

Estate management and accounts

By the middle of the nineteenth century, owner-ship of land in Britain was concentrated in a few hands. In the 1870s a government survey of land ownership (BPP, 1874, verified and corrected by Bateman, 1883) revealed that a mere 1,688 'great landowners' with estates of 3,000 acres or more owned 43.2% of England and Wales. Six of these great landowners controlled estates generating annual incomes of £150,000 or more. One of the six was the 3rd Marquess of Bute.

Large and complex aristocratic estates required careful management. Their owners, however, had many calls on their time, with political and social duties being onerous, while the wealthier landown-ers often owned several estates in different parts of the country. Thus, personal management of their estates by resident landowners was rare. Estate management would be delegated to salaried officials: bailiffs, stewards and agents. 'To manage a landed estate was to run a business: indeed, for all the impact of the industrial revolution, the great landed estate was one of the largest enterprises in the Victorian economy' (Beckett, 1986, p. 143). On the largest estates, with properties in different counties, ultimate responsibility might rest with a chief or supervisory agent, who often bore the title of auditor (Spring, 1963, p. 4; Raybould, 1973, p. 13). Smaller estates might be managed by a resident agent assisted by one or two clerks and bailiffs. Some estates employed specialists, such as mining engineers, to supervise particular activities (Mee, 1975, p. 98).

Owners looked on land as the foundation of social and political influence, but exercising this required a steady source of revenues, and this was derived from their estates. Although some aristo-crats were content to regard their estates merely as the source of twice-yearly remittances to their London bankers (Thompson, 1963, p. 152), and a few were able in a single generation to dissipate the accumulations of centuries (Thompson, 1955), most adopted a policy of maintaining and improv-ing their estates, so that revenues would gradually rise. For many, such a policy was scarcely a matter of choice: the option of selling an estate and reinvesting the proceeds in government stocks or other securities, or spending them, was generally absent. This was because the vast majority of owners had only life interests in their estates, which were held under the system of *strict settlement* (English and Saville, 1984). This system circum-scribed the powers of the current life tenant: he would not normally be able to sell the estate or raise mortgages on the security of the estate lands. On the other hand, life tenants were expected (by the terms and the settlement and by social and family pressure) to maintain, improve and expand the estate, so as to enhance the status of their families. Thus landowners had to operate under legal and social constraints. Stone and Stone (1986, p.196) summarise the objectives of the British landed elite: 'Profit-maximisers they might be, but even more they were prestige-maximisers', while Beckett (1986, p.320) notes: 'Aristocrats were not simply businessmen. The maintenance of their social position depended on conspicuous consump-tion and ostentatious display, so that none could be entirely rational in their spending.' It is of course easier to maximise prestige and indulge in conspicuous consumption if cash is plentiful than if it is scarce, so careful estate management was in the interests of landowners.

With management of estates delegated to agents, landowners needed to be able to control their agents' activities. Moreover, agents had to be able to record the various transactions taking place on the estate. A mainly agricultural property would give rise to a limited range of transactions: rents would have to be collected, while outgoings for maintenance of the estate, improvements to prop-erties, the occasional property purchases, taxes and other costs, would have to be paid. In general, estate accounts would be statements of receipts and payments by the estate official presenting the account. If the official had widely varied duties, the accounts might well combine transactions relating to very different aspects of the estate. Such ac-counts have been criticised by historians. For example, Thompson (1963, p. 153) describes as 'confusing' the house steward's accounts on the Earl Fitzwilliam's Wentworth Woodhouse estate, which included 'the consumption of oats by race-horses with the payment of wages to miners in one single tally.' For the purpose of controlling the activities of an estate official, such an account might well be more relevant than one that at-tempted to segregate different activities. Such a segregation was often achieved more indirectly, by employing separate estate officials, who accounted individually for different aspects of the estate. It would be left up to the owner to draw together the different accounts, in order to gain an overall view of his estates.

The basic form of estate accounts as late as the nineteenth century had changed little from that developed in the Middle Ages for controlling and reporting on the activities of manorial bailiffs and reeves (Noke, 1981): the 'charge and discharge' method. This approach involved the preparation of periodic accounting statements showing what the estate official had received (or in some cases, what he should have received), and how these receipts had been spent, or remitted either to the landowner or to a superior official. By the sixteenth century, charge and discharge statements were being presented in a bilateral form, with the 'charge' on the left-hand side and the 'discharge' on the right-hand side (Pollard, 1965, p. 210). As

the number of transactions needing to be recorded increased, officials often made use of subsidiary records, of which the most common was the Rental. This was a list, normally classified by manor or parish, of all tenancies, showing the rent due and the amount actually received. Such an accounting record was widely recognised as the central component of estate accounting. Edward Laurence (1727), in his pioneering manual of estate management, included such a record in his model set of estate accounts. The principal eighteenth century Scottish writers on accounting also emphasised the Rental (Mepham, 1988, pp. 280–283). Estate rentals were used on many estates in South Wales (Martin, 1979; Thomas, 1969), and followed a fairly standard form. For non-agricultural activities, separate records would often be maintained, and in the nineteenth century these increasingly adopted a double-entry form. On the Dudley estate in the West Midlands, for example, the important coal mines were from 1836 accounted for on double-entry principles (Raybould, 1973, p. 233).

Until the nineteenth century, double-entry gained little favour as an alternative to charge and discharge accounting for aristocratic estates. (Lee, 1981, describes an atypical double-entry system, the Francis Willughby executorship accounts, 1672–82, but even these were replaced by charge and discharge accounts after 1682). Indeed, several writers of bookkeeping treatises advocated charge and discharge systems for estates, even though they supported double-entry for the commercial organisation. Thus Stephen Monteage, in *Instructions for Rent-Gatherers Accompts* (1683), described a charge and discharge system, while Charles Snell, in *Accompts for Landed-Men* (1711), discussed an accounting system that was essentially a record of receipts and payments. One book recommending double-entry was *The Gentleman Accomptant*, by 'A Person of Honour' (Roger North, 1714), although this was in the context of an estate actively farmed by its owner, rather than one let to tenants.

We must be careful when describing an accounting system as 'double-entry'. A surviving estate account in bilateral form might be part of an integrated double-entry system, but is more likely to be a summary statement, in charge and discharge form, of a record of receipts and payments (the system of Laurence, 1727, is of the latter form). Even where day-to-day estate records appear to be kept in double-entry form, there is little evidence of such summary statements as profit and loss accounts, let alone balance sheets (a rare example to the contrary is the estate accounts of Herbert Mackworth of Gnoll, 1759–60, reproduced by Jones, 1985, pp. 53–59). Some economic historians seem to give disproportionate weight to double-entry. For example, Beckett (1986, p. 151) claims: 'The double-entry bookkeeping system may have been invented to protect owners from the machinations of venal stewards', giving as an example of one who had been deceived the estate owner Corbyn Morris (author of *A Plan for Arranging and Balancing the Accounts of Landed Estates*, 1759). However, Morris's system of estate accounts (as described by Jones, 1985, pp. 46–52) is not a double-entry one at all, but rather a sophisticated charge and discharge system.

Even when double-entry was used for recording day-to-day transactions, the annual statements would almost always take the form of charge and discharge type accounts, summarising receipts and payments. Annual estate statements might reflect a certain amount of accrual accounting for the main income item, rents. Such statements might include rents *receivable* rather than received, together with arrears brought forward and carried forward. This had deep roots in charge and discharge accounting. Noke (1981, p. 143) identifies parallel treatments of arrears in medieval manorial accounts. It would seem that double-entry, as a recording system, was not regarded as providing significantly greater control over the actions of estate officials than the traditional charge and discharge system. The absence of explicit profit and loss accounting may have greater significance than this, however. Not only did such accounts provide no better control over officials and no greater information about estate transactions, they were also largely inconsistent with the attitude of owners towards their estates, which were in general regarded as sources of economic, social and political power, not profit centres to be exploited.

The Bute estate

In the nineteenth century, the bulk of the Bute family's estates (some 95,000 out of 120,000 acres) lay in Scotland, but over 70% of their income came from estates in Glamorgan. The Butes had acquired these estates through the marriage in 1796 of the 1st Marquess to Lady Charlotte Windsor, daughter and co-heiress of the 2nd Viscount Windsor, then the largest landowner in Glamorgan. The estate consisted of over 11,000 acres of enclosed land scattered through the county of Glamorgan, and the lordships of several manors, covering most of the valleys and mountains to the north of Cardiff. When the estate passed to the 2nd Marquess in 1814, it was mainly agricultural; over the next 65 years, the estate income became drawn increasingly from mineral royalties, the Cardiff Docks, and the urban development of Cardiff and other towns in Glamorgan.

The 2nd Marquess of Bute, unusually for an aristocrat of his rank, inherited his Glamorgan estate free from the rigours of strict settlement, and thus he was able to sell it or borrow on its security. Bute inherited other estates; he preferred to spend most of his time on these, visiting Glamorgan only

for a few weeks each year. As an outlying and, at
the time Bute inherited it, an unprofitable part of
his land holdings, the Glamorgan estate might
have been regarded as a source of ready funds to
be invested in land elsewhere in Britain. Bute,
however, perceived that the Glamorgan estate held
great potential as a source of income. One of his
earliest actions following his first visit to Wales in
1815 was to commission a survey of the estate, and
this was performed over the next few years by
David Stewart of Edinburgh. The survey was
crucial not only in revealing weaknesses and fail-
ures of past management (the gross annual rent
roll of only £6,700 in 1814 was very low by the
standards of comparable estates elsewhere in
Britain) but also in indicating scope for commer-
cial development of the estate. Bute's freedom
from the restrictions of strict settlement, coupled
with the income from his other estates in England
and Scotland, made it possible for him to take risks
on his Glamorgan estate that a more constrained
owner might well have shunned.

Bute inherited an essentially agricultural estate,
divided into farms and smallholdings and let to
tenants. During the years before 1824, the admin-
istration of the Glamorgan estate lacked direction,
and several persons acted as agent for short
periods. The series of unsatisfactory agents came to
an end with the appointment of Edward Priest
Richards, a Cardiff solicitor, in 1824. When the
Marquess was absent from Glamorgan, Richards
was his representative and spokesman in political,
social and economic activities, while Bute's knowl-
edge of events and opinions in South Wales came
largely from Richard's extensive correspondence.
As the estate changed in character, however,
Richards was to play a diminishing role, specialist
managers being introduced for the estate's new
activities. In 1841, most of his duties with respect
to the agricultural estate were taken over by a
trained land agent, John Stuart Corbett, when the
estate was divided into a 'Country' department and
a 'Cardiff' department, the latter managed by
Richards.

Stewart's survey had revealed the opportunities
for exploiting more effectively the mineral reserves
of the estate. This represented a potentially import-
ant source of income, as minerals found under-
ground belonged to the owner of the surface, who
could extract any mineral deposits himself or lease
the mineral rights in exchange for rents and roy-
alties. Bute experimented with coal mining, and in
1827 mineral activities were split off under the
supervision of Robert Beaumont, a mining engin-
eer. The direct involvement in coal mining, the
Rhigos colliery, was to prove unsuccessful, how-
ever, and Beaumont was dismissed. Bute there-
fore decided to rely on rents and royalties from
the mineral reserves under his land. He faced an
obstacle: important mineral reserves had been

leased to the Dowlais Iron Company for an annual
rent of only £23, and the lease did not expire until
1848. The company was exploiting the mineral
reserves intensively (Davies, 1968; Edwards and
Baber, 1979; Jones, 1987), but the Bute estate
received no benefit from this. The 2nd Marquess
was personally active in attacking the Dowlais
lease, but he needed professional assistance, and
another mineral agent, W. S. Clark, was appointed
in 1845.

The exploitation of mineral reserves generated a
dramatic increase in transport requirements. In the
early nineteenth century, port facilities at Cardiff
were already proving inadequate for the increasing
level of commerce. Bute owned virtually all the
coastal land and foreshore at Cardiff, so any
expansion of the port would have to be on his
property. In 1828, Bute was advised that a new
dock at Cardiff would cost £66,000 and generate a
return of 7%. Financing such a venture was well
within his resources by that time, and construction
of the 'Bute Ship Canal' (later called the Bute West
Dock) was begun in the mid-1830s and completed
in 1839. Although Richards acted as cashier to the
Dock, building operations were controlled by a
resident engineer, and the administration of the
completed Dock was separated from the rest of the
estate. The cost of the Dock was much greater than
Bute had anticipated, however, and he ran into
financial difficulties, necessitating the sale of his
Luton Hoo estate in Bedfordshire in 1842.

Like many landowners with scattered estates
(Spring, 1963, p.16), Bute himself had to act as the
integrating force for several self-contained units.
As the Glamorgan estate was developed, Bute also
had to coordinate the diverse estate activities,
which reported separately to him. He achieved this
partly through regular personal visits to Cardiff,
normally in the spring and the late summer or early
autumn, when he would combine political and
social obligations with estate business. But for as
many as eleven months out of twelve, Bute was an
absentee landlord. The general running of the
English and Welsh estates was the responsibility of
Bute's secretary Thomas Collingdon, who was
based at Luton Hoo. This system of management
was to change after the death of the 2nd Marquess
in 1848. His son and heir was barely six months
old, and thus the Bute estates could look forward
to a minority of over twenty years before the 3rd
Marquess came of age and was legally able to
manage his estates.

In 1845, the 2nd Marquess had transferred his
Glamorgan estate to trustees, in order to facilitate
day-to-day administration (Davies, 1981, p.44).
Bute's will confirmed this arrangement and ex-
tended it to his other estates in England (the
Scottish estates were dealt with separately). The
trustees faced a severe task: the rapid growth in the
South Wales coal trade was putting increasing

pressure on the Cardiff Docks. In 1853, work began on the Bute East Dock, and this was to absorb much of the estate's growing revenues during the 3rd Marquess's minority. From 1852, one of the trustees, John Boyle, managed the Docks. The 'Country' department continued to be run by Corbett, while Richards retained the 'Cardiff' department, dealing with the increasing urban development of the Bute estate. Richards paid most of the estate management costs. The minerals were managed by Clark until his death in 1864, when he was succeeded by his assistant W. T. Lewis. Collingdon, who had moved to Cardiff from Luton Hoo when that estate was sold, was responsible for overall estate finances, including the Docks (Davies, 1981, p.71). The system of management continued after the 3rd Marquess came of age in 1868, and it was not until 1880 that the overall control of Boyle ceased. Even after this, the 3rd Marquess was content to delegate much of the decision-making to his chief agent, now Lewis.

During the period covered by this study, the Bute estate therefore exhibited two quite different styles of management. During the life of the 2nd Marquess, there was only one focus for decision-making: the Marquess himself. After 1848, the estate was managed by trustees, whose activities were constrained by Bute's will and the general law of trusts, but who were, even after the 3rd Marquess came of age, not in practice subject to monitoring by an interested owner (although the accounts for at least some parts of the estate were audited by professional accountants). Major policies tended to continue the directions laid down by the 2nd Marquess, and these did not, as it turned out, work in the long-run interest of the estate.

The estate accounts under the 2nd Marquess (1814–1848)

For the Bute estate, the main day-to-day accounting record that has survived is the Rental. There is a full series of these running from 1816 to 1839, with some Rentals (mainly for the 'Cardiff' department) from later years. The Rentals are in bound books, each normally covering three years. There are two copies of the Rental: the 'rough' rental, which was written up from day to day, and the 'fair' rental, which was written up annually, and contains slightly less detail than the 'rough' rental. Particularly in the 1820s, when rents were depressed across Britain, Bute would retain the 'fair' rental for long periods so that he could identify details of problem properties and tenants discussed by Richards in his letters, while Richards kept the 'rough' rental in Cardiff.

Most of the Bute estate was let on annual tenancies, and rents were technically due annually in advance. In practice, they were normally paid in

two instalments in arrears, in December and July. Richards would hold 'Rent Audits' twice a year. These would be spread over three days: on the first of these, the Audit would be held at Llantrisant (about 10 miles north-west of Cardiff, and closer to the main part of the estate), while the subsequent two days would take place at Cardiff. The Audit would be a social as well as business occasion, with the estate providing a dinner for the more important tenants. The bulk of the rents came in at the Audits, but tenants might also pay at other times throughout the year (for example, some tenants would pay when Richards held periodic manorial courts at various locations on the estate).

The Rental was organised so as to allow for the recording of amounts received from tenants, while providing a useful summary of tenancy details. An entry was made for each separate property, and the individual properties were listed by parish. The properties were numbered consecutively through the list (in 1826/1827,[2] for example, the Rental included 910 separate tenancies), and within each parish the properties were cross-referenced to David Stewart's survey of the estate. A typical entry is shown in Figure 1. This represents one of the larger properties on the estate, in the parish of Cosmestone (south-west of Cardiff). The property was number 378 in the Rental and number 3 in the parish, and was let to Nicholas Hopkins for a term of 21 years, rather than on the more usual annual tenancy. Details of the tenancy are provided (for some properties the area of the land would also be stated). Any amounts brought forward as arrears from previous years are then given, and the rent due for the year is stated; these two amounts are added together to show the total due from the tenant. This total is then accounted for, through allowances (these are amounts credited to the tenant for costs for which the estate is responsible but which the tenant has paid, and include certain repairs and improvements and land tax assessments), cash received, and arrears carried forward. The dates of receipts are noted, along with any remarks intended to explain allowances given or other adjustments. The arrears brought forward, rent due, allowances, receipts and arrears carried forward are totalled by parish, and the Rental includes an Abstract at the end of the detailed listing showing the totals by parish and overall.

The Rental provided a detailed analysis of the financial position of the estate from year to year, and on some estates it would form the basis of the annual accounting to the estate owner. On the Bute estate, however, the 2nd Marquess was kept up to

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[2] Confusingly, given that the accounting period straddled two years, the Rental for each accounting period was referred to by the *earlier* of the two years: thus, the Rental for 1826/27 was called 'Rental 1826', and arrears as at 31 July 1827 were referred to as 'Arrears 1826'.

Figure 1

Typical Entry in Bute Estate Rental

No.	Tenant	Premises	Arrears 1825	Rent 1826	Total	Allowances	Cash Received	Remarks	Arrears 1826
		Parish: Cosmestone							
3	378 Nicholas Hopkins	Swaan Bridge Farm 215 2 1 / Land formerly at will 47 1 3 / 21 years from 2ⁿᵈ Feb 1824 / Rent 25ᵗʰ Dec 262 2 3 (sic)	£397 1 -	£263 10 4	£661 1 4	Overcharge in 1824 & 25 ... 10 4 / 15ᵗ 1824) Drains 30 - - / 15ᵗ 1825) / New Improvemᵗ 39 13 6 / Buildings & Repʳ 55 16 6	£381 10 -	Janʸ 27 1827 All these allowances made in Mʳ Stewart's agreement	£153 11 -

(*Source: NLW, Bute Box 64, Rental for 1826/27, f. 35*)

date through monthly *Accounts Current*. Again, both 'rough' and 'fair' copies of these have survived. These were statements in bilateral form of all amounts received and disbursed by Richards on behalf of Bute, and were normally sent to Bute a few days after the end of each month, enclosed in a letter from Richards setting out any current problems with the estate and giving an estimate of likely cash demands or potential remittances to Bute's bankers. Generally, the monthly Accounts Current showed a balance due to Richards, except in the Audit months of December and July, when large net receipts would arise. The Accounts Current itemised the various individual disbursements, but rents received were shown only in total; the 'rough' Accounts Current contain marginal calculations agreeing to the total rent receipt figures that could represent page totals from a separate cash book that has not survived.

The monthly Accounts Current allowed Bute to supervise estate outgoings, although Richards, as the agent on the spot, was normally left to take such decisions as whether to press particular tenants for arrears. Bute's main control over his agent's activities came through the annual *Glamorganshire Estate Account Current*. In the period up to 1823, this statement was not prepared to a fixed date,[3] but once Richards took over as agent the annual Account Current was drawn up for twelve-month periods ending on 31 July. It thus included the receipts at the July rent Audit. The annual Account Current was a statement presented in bilateral form. The left-hand pages listed all disbursements (there might be as many of 500 of these), classified into several sub-headings, while the right-hand side listed receipts, again classified into sub-headings. The Account Current showed the total of rents received, as presented in detail in the Rental, but did not break down the total further. Each disbursement, and each sundry receipt, was numbered, and the number corresponded to a voucher. The vouchers for disbursements were usually invoices or receipts. The actual voucher was placed in a folded slip of paper, the outside of which indicated the year, voucher number, sub-heading in the Account Current, name of payee, amount and date.

As well as the detailed lists of payments and receipts, each Account Current contains an Abstract, showing the sub-totals for the various separate payment and receipt categories. An example of an Abstract is given in Figure 2. Several comments should be made on the Account Current and

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[3]This reflected the poor management of the estate before Richards took over. Another symptom was the level of rent arrears: in 1817, these were recorded as £15,715 3s. 0d., equivalent to 2½ years' rent roll. These were to be quickly reduced, as investigations by Stewart and others revealed many errors (and possible defalcations by the previous agent Henry Hollier).

Figure 2

Glamorganshire Estate

Abstract of Account From 1 Aug 1837 to 31 July 1838

Dr		£ s d		Cr		£ s d
1838				**1838**		
July 31	To Rates, Taxes and Tythes	206 6 4		July 31	By Rents received	12,872 10 1¼
	Annuities and Interest	129 - 6			Arrears of Rent 1837	3,635 4 10½
	Rents	1,407 2 5			Manorials	83 13 7
	Subscriptions	727 1 -			Royalties	47 13 5
	Establishment Cardiff Castle	570 1 10			Timber	1,645 6 10
	Buildings and Repairs	766 6 3½			Miscellaneous	
	Improvements on Estate	678 7 -			Pontcanna Farm	7,371 4 10
	Woods and Plantations	387 16 8¾			Bute Ship Canal	322 - 2
	Expences (sic) of Management	786 1 5			Incroachments	335 10 10
	Law Expences	205 10 4				3 16 6
	Purchases	5,689 15 7			Mineral Rents	8,032 12 4
	Contingencies				Rhigos Colliery	3,363 18 4
	Cathays Park	79 12 10½			Lands Sold	360 11 4
	Pontcanna Farm	2 18 1¼				350 - -
	Elections	53 14 7				
	Taff Vale Railway	57 12 10				
		33 15 11 ... 227 14 4				
	Remittances					
	Rhigos Colliery	13,373 - 5¼				
	Mr R. Beaumont	1,228 11 11				
		373 9 9¾ ... 14,975 2 2¼				
	Arrears	3,635 4 10½				
	Total £	**30,391 10 10**			**Total £**	**30,391 10 10**

Examined by the Vouchers

Bute

Cardiff Castle 24 October 1838

(Source: NLW, Bute Box 60, Bundle 3)

ABR 21/82—E

Abstract. First, their form suggests that Richards used a double-entry ledger, which has not survived, although this would more probably have covered all his clients rather than just the Bute estate. Second, the Account Current and Abstract are essentially prepared on a cash basis. Thus, the Abstract shows the amount actually received for rents, not the amount receivable for the year. In 1837/38, the total rent roll shown in the Rental was £12,406. Arrears at the start of the year were £4,460, making a gross total receivable from tenants of £16,866. Allowances totalled £380, and arrears carried forward at the end of the year were £3,635, so that net cash receipts were £12,851. In addition, £22 was received in respect of arrears written off in 1833,[4] giving total receipts of £12,873. Although the total of rent arrears at the end of the year (misleadingly described as 'Arrears of Rent 1837') appears on the receipts side of the Abstract, it also appears on the payments side, so that the total receipts and payments balance. The Account Current thus differs from equivalent statements on other contemporary estates in not showing rents receivable for the year, with arrears brought forward. This suggests that, if Richards used a double-entry system, it was only a rudimentary one, without a full integration of the Rental. The Abstract and the annual Account Current did not reveal how efficient the agent had been in collecting rents and reducing arrears, but this information was readily available from the Rental. Similarly, they did not show the total amounts expended on the estate on such items as repairs and improvements, as payments by tenants allowed to them as deductions from their rents were not added to the sums disbursed directly by the agent and recorded in the Account Current. This gave rise to greater differences in years such as 1830/31, when allowances of £2,294 represented about 18% of nominal rents, than in 1837/38, when allowances were only 3% of nominal rents. In any event, allowances were fully detailed in the Rental.

The annual Account Current was prepared by Richards, or by his clerk John Lloyd, in August each year. The year-end date of 31 July was not regarded as a rigid 'cut-off' date for transactions. If major receipts or payments arose in early August, they were often included in the Account Current being drawn up. Thus, the Account Current normally included as a payment the balance due to Bute and remitted to him by Richards some time in August.[5] Bute would examine the accounts several weeks later, the examination taking place at Cardiff Castle (as it did in 1838) or elsewhere. Bute would be provided with the Account Current, the vouchers, and the Rental, and would no doubt cross-examine Richards as to various disbursements or arrears. Sometimes, Bute would give written instructions as a result of reviewing the accounts, or other information that Richards had supplied. For example, on 12 January 1828, Richards sent Bute a list of arrears over £10 outstanding after the December 1827 rent Audit. Bute evidently gave his comments on this, as on 23 January 1828, Richards wrote to Bute: 'I have received the List of Arrears & your Lordship's instructions thereon which shall be immediately attended to.'

The Rentals and Accounts Current deal solely with receipts and payments for which Richards was responsible. They do not include the mining activities of Robert Beaumont. A double-entry ledger, the *Mineral Rental 1826 to 1830* (which actually covers a period to December 1831), has survived, and this includes accounts for the various mineral activities, a cash account, and half-yearly 'Balance Sheets'. The latter are actually little more than summary receipts and payments accounts, and show royalties received on the credit side, and disbursements (including Beaumont's salary of £180 per half-year) and remittances to the 2nd Marquess on the debit side. No accounts have survived for the Docks, which were becoming increasingly important. Accounts of some sort probably existed, as various documents are able to give the cost of the Bute Ship Canal as about £222,000 in cash.[6] For Bute to gain an overall picture of his Glamorgan estate, he would have had to consolidate in his own mind accounting and other information from several sources.

The estate accounts under the 3rd Marquess (1848–1880)

Following the death of the 2nd Marquess, there appears to have been no significant change in the

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[4]When Richards took over the duties of Agent in 1824, the arrears were analysed, and certain old and probably irrecoverable amounts were transferred out of the main Rental onto a supplementary list. A note to the Account Current for 1824/25 shows that Richards was not prepared to accept responsibility for arrears arising in the period before he commenced office. In subsequent years, these old arrears were reduced as cash was received or amounts were written off. The cash receipts from old arrears were shown separately in the annual Accounts Current. The exercise of transferring old arrears was repeated in 1833, when a total of £691 4s. 3½d. was transferred.

[5]Up to 1833, a small balance (in 1833 £1,175) might be held by Richards, but thereafter the final remittance would exactly account for any amounts received but not disbursed or remitted previously. This could be achieved because of improvements in banking in South Wales during the 1830s, culminating in the opening of a branch of the National Provincial Bank in Cardiff in 1835 (Roberts, 1980, p. 380). Bute opened a general estate account and an account for the Dock here, and Richards no longer had to make remittances to Bute's bank accounts in London.

[6]As well as timber, stone, etc. from the estate valued at about £150,000 (Davies, 1981, p. 270; Daunton, 1975, p. 70). Interestingly, the estate accounts were not charged a monetary amount for these materials provided in kind.

form of the detailed estate accounts, except for those brought about by the involvement of trustees for the 3rd Marquess. Unfortunately, fewer accounting records have survived from this period, but they still provide a useful picture of the management of the estate. Richards continued to produce his annual Accounts Current (although these now covered only the 'Cardiff' department), but detailed scrutiny of these was delegated to a firm of professional accountants, Quilter Ball & Co. This firm reported on the Account Current for the Cardiff District for the year ended 31 July 1848 (the year of the 2nd Marquess's death) in the following terms:

> We have examined the within account and the several statements of details and other subsidiary accounts relative thereto together with the vouchers and certify the same to be correct.
>
> Quilter Ball & Co.
> London 6th April 1852
>
> Note The Statements of details referred to above are comprised in the foregoing folios numbered 1 to 24, and the other subsidiary accounts in folios 41 to 75 inclusive in Rental Book of Cardiff District.
>
> Q. B. & Co.

Quilter Ball & Co. were commissioned to audit the accounts some years after the 2nd Marquess's death, and in the first instance reported on several years' Accounts Current, in the above terms. After this, they used the much shorter form of audit report: 'Examined and audited the within accounts', the audit report normally being dated about one year after the end of the accounting period to which it related.

The main change is in the form of the annual accounts. These now cover the English estates of the late 2nd Marquess, for which the trustees were responsible, as well as the Glamorgan estate. They contain less detail, but are still essentially receipts and payments accounts. The annual *Abstracts of Receipts and Payments of the Late Marquess of Bute's Executors and Trustees* were drawn up and signed by Thomas Collingdon. His rough notes have survived for some years. These are in 'T-Account' form, listing receipts and payments under various headings, and determining the net balance to include in the Abstract. They give the appearance of summarising a cash book or other book of prime entry that has not survived. The Abstracts are drawn up for periods ending on 18 March, the anniversary of the 2nd Marquess's death. An

example is given in Figure 3. This form was used unchanged from 1848/49 to 1862/63. In the following year, receipts and payments were separated into the categories 'Ordinary' and 'Extraordinary', and the Abstract shows clearly the surplus of ordinary receipts over ordinary payments.[7] In 1868, the year in which the 3rd Marquess gained his majority, the Abstract was for the shorter period from 18 March to 31 December, and amounts were apportioned between the periods before and after the Marquess's birthday. The series of Abstracts continues for calendar years until 1880.

During the 3rd Marquess's minority, the Glamorgan estate was a substantial and rapidly growing source of cash to be managed by the trustees. Until he came of age, the young Marquess made hardly any demands on the Glamorgan estate for maintenance. Moreover, there were few other claims on the estate (the Marchioness of Bute received £2,000 per annum, but she died in 1859). The 2nd Marquess, at his death, had left debts totalling £398,636, of which £203,000 was due to the Equitable Assurance Co. and £50,000 to the Pelican Assurance Co. The trustees saw it as their duty to reduce this indebtedness, and by 1855 the total amount outstanding was £262,292. The annual interest on this of about £10,000 could by then easily be met out of the revenues of the estates. When the 3rd Marquess came of age, the estate indebtedness was £235,000. Against this, the trustees had invested over £135,000 in Consols.

The Abstracts for this period provide information about the borrowing and capital expenditure, with statements showing the cumulative totals of these up to the date of the Abstract. These totals were probably shown on the face of the Abstract because the trustees had the duty, so far as revenues permitted, of repaying the debts left by the 2nd Marquess, while they had to justify expenditure on improving the estate (and might be sued by the Marquess when he came of age if they had exceeded their powers and made unfortunate investments). Information about the total expended on capital improvements would have made clear to the 3rd Marquess how the large cash inflows from his estates had been utilised. The trustees had the power to expand dock facilities, and they applied nearly all the estate revenues in the years to 1880 to extending the Docks. Detailed accounts for the Docks have not survived for this period. The Abstracts and Collingdon's rough notes imply that they were essentially cash-based. Figures that appear to represent monthly excesses or deficits of operating receipts over operating payments are listed in the rough notes, while capital expenditure is shown separately, being disbursed by the trustees. It is quite likely that Boyle, as Dock Manager, had frequent reports of ships loading and unloading, and regular summaries of port dues

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[7] This had been shown in a marginal note in previous years: for example, the Abstract shown in Figure 3 presents a balance of £75,492 11s. 7d. after deducting the various regular estate outgoings of £21,297 11s. 4d. from the estate income of £96,790 2s. 11d.

Figure 3

Abstract of Payments and Receipts by the Trustees of the late Marquess of Bute's Estates
and Properties in England and Wales for the ninth Year from 18th March 1856 to 18th March 1857

Dr | | | | | | | **Cr**

Payments (Dr)

1856						
March 18	To Balances from last year's accounts					
	viz. Due to the N P Bank	504 7 9				
	less at Messrs Coutts & Co. at the Union Bank	124 17 2				
			7,867 12 7			
	Due by the T. V. Railway Co	2,092 17 11	2,722 2 10			
1857				5,145 9 9		
March 18	To Debts on Security remaining on 18th March 1856		313,292 7 -			
	Loans rec^d between 18th March 1856 & 18th March 1857		30,000 - -			
			343,292 7 -			
	Paid off between the same period		30,812 7 -			
	Debts remaining 18th March 1857		£312,480 - -	30,812 7 -		
	To New Works at Cardiff		83,506 3 11			
	Formerly		285,555 4 6			
			£369,061 8 5	83,506 3 11		
	To Interest on Debt		13,968 9 9			
	The Marchioness of Bute for Maintenance		2,000 - -			
	Annuities		741 - -			
	Salaries		1,300 - -			
	Insurances		23 5 -			
	Subscriptions and Donations		12 10 -	18,045 4 9		
	To House – Eccleston Square viz.					
	Special and Extraordinary expences	765 12 2				
	Current expences	682 14 8	1,448 6 10			
	Law & Parliamentary expences		1,025 16 -			
	Trustees' expences in execution of Trust		35 16 6			
	A Roos Esq. for his Professional Services		310 10 -			
	Cardiff Steam Towing Co. 2nd & 3rd Calls on 20 New Shares		200 - -			
	Pantechnicon for 6 months Warehousing G^ds &c to June 1856		8 1 -			
	Wm Essnie for Church at Aberdare		121 15 9			
	Bell & Fittings for 'All Saints Church'		81 19 11			
	Miscellaneous		21 - 7	3,252 6 7		
				£140,761 12 -		

Receipts (Cr)

1857						
March 18	From Glamorganshire Estate –					
	Minerals	36,371 11 -				
	Bute Docks		41,884 4 4			
	Ballast Department	1,882 18 7				
	Mr Corbett		38,254 9 7			
			4,328 17 9			
	Mr B P Richards		1,365 6 7	85,832 18 3		
	From Bedfordshire Estate					
	Durham Estate		4,836 7 3			
	Durham Colliery		3,605 14 8			
			2,467 12 9	10,909 14 8		
	By Interest and Dividends		47 10 -	47 10 -		
		96,790 2 11				
		21,297 11 4	96,790 2 11			
		75,492 11 7				
	From Loans, viz.					
	From N P Bank, Cardiff		20,000 - -			
	John Clayton, Esq.		10,000 - -	30,000 - -		
March 18	By Balances carried to next year's accounts, viz.					
	Due to N P Bank, Cardiff		15,845 3 3			
	less at Messrs Coutts & Co.		1,873 14 2	13,971 9 1		
				£140,761 12 -		

E.E.

T. Cedlington

(*Source: CCL, Bute Box X, document 2/9*)

received and expenses paid, so that he could control the operations of the Docks. However, this does not seem to have extended to costing data. When the Bute estate applied for a private Act of Parliament in 1882 to extend the Docks, the 3rd Marquess was shocked to receive special calculations revealing that, compared with a charge of 2.25d. per ton, the Docks were making a *loss* of 1.17d. per ton of coal shipped (Daunton, 1977, p.27).

Management and accounting on the Bute estate

How useful were the estate accounts to the management of the Bute estate? As regards the day-to-day conduct of business, the accounts that have survived (in particular the Rentals) would have provided a clear and accessible overview of the current financial position of the estate, by disclosing rents due and money received. Combined with a cash book or similar record, the agent would have been able to keep a simple but effective record of incomings and outgoings. The 2nd Marquess received monthly accounts, promptly after the end of each month, and so could monitor the state of affairs of the estate, while he was provided with regular additional information through the copious correspondence of Richards. The trustees of the 3rd Marquess do not appear to have had monthly accounts in the same form as the 2nd Marquess, but they (or at least Boyle) were in daily contact with what had by then become the main focus of the estate's activities, the Docks.

Estate accounts in the form found on the Bute estate were not only useful for day-to-day management of an agricultural estate and control by the estate owner of the activities of his agent. They also provided important information to the owner, particularly if he was the life tenant of a settled estate. Given the expectation that the life tenant would seek to enhance his family's status by maintaining, improving and expanding the estate, the cost of this would have to be met out of the revenues generated by the estate, as borrowing was heavily constrained. The life tenant would therefore be particularly interested in current net cash surpluses, while he would consider it legitimate to charge current cash flows with the outlay for improvements and land purchases. Even for an owner such as the 2nd Marquess whose estates were not settled, cash flow information would have been essential to show the extent to which his estates were generating sufficient cash to fund his development activities (or pay interest on loans raised for this purpose).

To achieve the dual objectives of controlling the activities of agents and managers, and providing cash flow information, the estate accounts would have to include *all* receipts and payments. Until

1864, there was no distinction in the Bute accounts between 'capital' and 'revenue'. The Abstract in Figure 2, for example, includes such capital expenditure as 'Improvements on Estate' as well as 'Purchases' (the latter being the cost of land added to the estate during the year). The Abstract also does not distinguish between 'business' and 'personal' expenses, by including such personal costs as 'Establishment Cardiff Castle' (the wages of servants, running costs, etc. of the Castle) and 'Subscriptions' (largely payments to local charities).

One of the innovations of the trustees' Abstracts was the disclosure (until 1863 as a marginal calculation, thereafter more formally) of a figure that might be described as 'cash surplus on ordinary activities'. This is not readily obtained from the Abstracts prepared by Richards for the 2nd Marquess. Details are revealed of amounts paid to the Marquess, or disbursed at his order (during the 1830s, for example, Richards made occasional payments out of the estate's cash inflows to the Bute Ship Canal), but at certain times during the year, Bute had to remit cash to Richards, and these are merely included in the category of miscellaneous receipts. There is no attempt to determine the net amount remitted to the Marquess through the year. The annual Accounts Current normally itemised remittances to and from the Marquess, however, so he would have been able to work out the net cash surplus for himself if he wished.

Thus the cash orientation of the estate accounts met the needs of an aristocratic landowner for information about current cash flow. Statements of assets and liabilities were of little meaning to a life tenant, as the principal asset—the land—would in all probability have been inherited or come into the family through marriage, and thus not have a meaningful cost, while it would be effectively inalienable by the life tenant, and thus not have a meaningful market value. Even for an owner such as the 2nd Marquess with full powers of disposal over his estate, information on current cash flows would be essential in estimating the market value of his property, as agricultural and mineral land values were normally based on multiples of current rents (Thompson, 1957).

Were the accounts useful for longer-term planning; did they help to determine the directions that should be taken in developing the estate? They would have been of use in giving an indication of the ability of the estate to generate the cash inflows needed to fund estate developments. Beyond this, it is unreasonable to expect estate accounts that are in essence statements of past cash flows to give much insight into the future. In many cases, this did not cause serious problems. For agricultural activities, change was a slow process, while mistakes in management could normally be quickly remedied (a bad tenant might be evicted or a rent adjusted). Mineral royalties might require hard

negotiating, but once rates were set, the revenue to the estate owner depended on the quantity of minerals extracted, which was largely outside his control. The owner's capital investment in the land was regarded as fixed and permanent, and cash flows provided a good measure of return.

More directly commercial activities, however, needed both careful planning and more accurate monitoring of performance, and neither of these seems to have been present in the Cardiff Docks. Estimates of capital expenditure were grossly understated not just in the building of the Bute Ship Canal but also for later dock expansions. These were forced on the trustees and the 3rd Marquess because of the obsolescence of existing facilities, yet cash-based accounting could not adjust for capital invested but no longer productive. Even in cash-flow terms, the Docks turned out to be a poor investment. By 1880, annual cash operating surpluses were only about 4% of total capital invested, and after 1880 the cash return from the Docks was if anything to fall (Daunton, 1975, p.73). It is not clear from the extant estate records whether the continued investment in the Bute Docks was a case of bad decision-making based on unreliable information or whether it became a matter of maintaining the prestige of the Bute family. If, as the evidence suggests, the form of the Dock accounts followed that of the other estate accounts, the ultimate failure of the Bute Docks (described in detail by Davies, 1981, pp. 276–277) would support (in a context rather different from manufacturing industry) the claim of Pollard (1965, p. 212) that 'two of the central problems of the new industrialist, a check on his capital investments, and on technical and other innovation, were beyond the abilities of [the estate accounting] system'.

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Book Reviews

The Reporting of Profits and the Concept of Realisation. *Sir Bryan Carsberg and Christopher Noke.* Research Board, Institute of Chartered Accountants in England and Wales, 1989. iii + 71pp. £10.

This very interesting monograph examines the meaning of 'realised profits' and the reporting of unrealised items in company financial statements. To British accountants, the meaning of 'realised profits' has been important, especially since the British Companies Act 1980 defined distributable profit as a company's accumulated realised profits (so far as not previously divided) less its accumulated realised losses (so far as not previously written off), and the Companies Act 1981 required that only profits realised at balance date could appear in a company's profit and loss account. 'Realised profits' were defined in the 1981 Act (extended to apply to distributable profit also) as profits treated as 'realised' according to generally accepted principles. These provisions have been consolidated in later companies legislation. However, neither statute nor British professional accounting pronouncement defines 'realised profits' satisfactorily and both contain inconsistencies in treating various profits and losses as realised. Thus, this monograph is both timely and important.

There are five sections covering: the introduction; a survey of the authoritative and general literature about the meaning of realised profits; an analysis of profit concepts and six alternative definitions of realisation; an analysis of eight issues concerning realisation in current practice; and a conclusion which sets out the authors' recommendations. At the end of the monograph are two useful appendices which contain excerpts concerning 'realised profits' from the accounting literature and from tax cases.

Based on their review of the literature, the authors conclude that no single definition of 're-alised profit' commands general acceptance. However, the literature does provide various ideas about 'realisation' which they analyse in section three. Six definitions of 'realisation' are examined: (a) conversion into cash; (b) conversion into some specified asset other than cash or into any of a group of assets, including cash; (c) resulting from an exchange; (d) earned by undertaking services; (e) represented by assets, the value of which can be measured with acceptable reliability; and (f)

represented by a freely disposable store of wealth. The authors argue that reliability of measurement (option e) is the only acceptable definition. Options (a), (b) and (d) to varying degrees invoke the measurement reliability test in option (e) but contain limitations, while options (c) and (f) can be rejected because neither provides directly a convincing measure of performance. The authors recommend that the Accounting Standards Committee define realisation in line with option (e).

The preferred definition of realisation also appears to serve as a sole profit *recognition* criterion. That is understandable, given the Companies Act's requirement that only realised profits should appear in the profit and loss account. However, it seems to this reviewer that measurement reliability must be only a necessary condition for recognition, not a necessary and sufficient condition. The difficulty is illustrated in the case of a prepaid magazine subscription where the revenue and costs may be known with a high degree of reliability, but it seems wrong to conclude that profit should be recognised before the magazines are produced. Perhaps some 'profits earned' criterion (as discussed in the FASB's Conceptual Framework) needs to be coupled with measurement reliability to amplify the definition of 'realisation'. Moreover, it is a pity that the authors do not provide operational tests for guiding accountants about when profits are reliably measured. (The same can be said for any 'profits earned' criterion.)

A fundamental difficulty in defining 'realised profits' in Britain is that distributable profit, being derived from European, notably German, company law, has creditor protection as an underlying objective, whereas accounting profit (as disclosed in a company's profit and loss account) provides information also to shareholders and other interested parties. As 'realised profits' are linked statutorily to both distributable profit and accounting profit, it is clear that the concept of 'realisation' must serve more than one master, which creates problems in defining the concept. The authors deal with these problems by suggesting that the profit and loss account be restricted to legally distributable profit (with a more demanding measurement reliability test) and that a Statement of Total Gains be disclosed which could indicate overall performance (with a less demanding measurement reliability test) including, presumably, unrealised profits and losses.

Another difficulty in defining 'realised profits' in Britain arises because distributable profit applies only to individual companies, not to groups. Thus, 'realised profits' have no place legally in consolidated accounts, yet consolidated accounts convey useful information to investors. This fundamental dilemma is not discussed in the monograph.

A final difficulty in defining 'realised profits' is that 'realisation' must be tied to some capital maintenance concept to facilitate profit measurement. The authors recommend that the ASC indicate a preferred capital maintenance concept—either financial capital or physical capital—for this purpose.

In conclusion, this monograph is fascinating reading for any accountant interested in understanding the concept of realisation and the problems involved in defining it. The authors have made a very useful contribution to the accounting literature.

University of   Richard D. Morris
New South Wales

Shareholder Use and Understanding of Financial Information. *T. A. Lee and D. P. Tweedie.* Garland Publishing, 1990, 420 pp. $70.

This book belongs to the series entitled 'Accounting History and Thought' edited by Richard Brief of New York University. The book principally consists of reprints of the two classic Lee and Tweedie research monographs: *The Private Shareholder and The Corporate Report* originally published in 1977 and *The Institutional Investor and Financial Information* originally published in 1981. The only addition is an introduction by Tom Lee which places the two studies in context and sets out the relevance of the original findings to the problems of today. Professor Lee summarises the main findings of the two studies as follows: 'Indeed, the overall conclusion was that, in the context of financial reporting, an exclusive world had been created in which accounting appeared to take place for accountants; and where only accountants could meaningfully use and understand reported financial information.'

Given that the two monographs received extensive reviews and critical comment when they were originally published, the editor has asked that my review be brief. My position is likely to be rather different from most in that I lived with these books during my formative yeats and rereading them is like discovering an old, favourite gramophone record. However, although the questionnaire material is now more than ten years old, I agree with Tom Lee's preface that most of the findings are likely to be reproduced today if a comparable

exercise were to be conducted. Accordingly, I think that these two studies should be seen as being more than just historical documents of a bygone era of accounting research when the notion of decision usefulness was in vogue. Certainly, there have been some important advances in our understanding of the accounting standard setting process. The simple approach of providing information that users might want has to be seen in terms of the consequences that might result, as well as in terms of the political and regulatory framework in which accounting standards are set. Nevertheless, there has to be some understanding of the role that accounting reports are fulfilling and it is in this regard that the findings are relevant. It is not unreasonable to suggest that part of what is now referred to as the audit expectations gap is in reality an accounting expectations gap, and the differences in understanding that are identified in the two studies reflect this. One might quarrel with the nature of certain of the questions asked in the surveys, but it would be interesting to repeat the exercise in the 1990s to see whether people's understanding has changed much in the intervening period.

University of Leeds   Peter Moize

The Concise Guide to Auditing Standards and Guidelines. *Roy Dodge.* Chapman and Hall, 1990. xix + 217 pp. £7.95.

The author begins the preface with one of the most striking statements I have ever read: 'Auditing is an exciting subject'! Apart from its thrilling subject matter, the main premise of the book is that there is 'unnecessary verbosity' in the text of the auditing guidelines ('the APC tend never to use one paragraph when two will do'). Hence, the aim of the book is to provide concise summaries of all the key issues and technical points in the auditing standards and guidelines. The intended audience would appear to be primarily students preparing for their professional exams—'The artificial complexity of these guidelines provides examiners with a mass of material on which to base their questions'. The book then is in the tradition of the 'Key Facts' series used to pass GCSE exams. Unfortunately for the author, the ICAEW's open-book exam policy may well mean that the number of students intending to rote learn the contents of the auditing statements will be substantially reduced.

The structure of the Guide is that all the key points of the official statement are summarised, a short comment is then given, and the section concludes with a set of exercises consisting of one or two case studies and a variable number of professional exam questions (suggested solutions

to which are at the back of the book). A short section on coping with auditing exams is also included to provide students with 'a few thinking tools'.

How well does the book succeed in its aims? The effect of condensing the material of the official statements into a series of key facts renders the material difficult to digest. The technique works much better in the companion volume on Accounting Standards where there are more hard facts to be summarised. Reading through the Auditing Guide is akin to being played all the leitmotivs in Wagner's Ring one after another. The grandeur of the original conception disappears completely. The author has done a competent job of summarising the statements, but a lot of the rationale of the auditing statements is that they are attempting to explain how the auditor should exercise his or her professional judgement. For example, the Going Concern Guideline does a reasonable job of setting out what auditors should be looking for when attempting to assess whether a company's problems are sufficiently serious to warrant a going concern qualification. Its purpose is to give the auditor some guidance in what is an extremely difficult area. However, when the Guideline is stripped down to the few specific points that it makes, the feel of the Guideline is lost. The summary acquires an air of clinical precision which the original did not possess and this effect is general. The act of summarising tends to eliminate the ifs and buts of the original and produces a greater air of certainty than in fact exists. It would be unfair to blame the author for this effect, since it is applicable to all summaries. Nevertheless, the problem is more acute in the area of auditor judgement, where there is little that is certain and a lot that is subjective.

I think therefore that this book will be of use only to people already familiar with the auditing standards and who need to learn the key facts for examinations. The 'busy practitioners' at which the book is also aimed should still refer back to the original statements since it is probably safer to look up a particular point from the original. The case study and exam questions are useful and provide some interesting learning material. However, similar material does exist in auditing text books.

Peter Moizer   University of Leeds

Who's Who in British Economics: A Directory of Economists in Higher Education, Business and Government. *Paul Sturges and Claire Sturges (eds).* Edward Elgar Publishing, 1990. ix + 627 pp. £75.

In reviewing *Who's Who in Economics: A Biographical Dictionary of Major Economists 1700–1981*, edited by Mark Blaug and Paul Sturges, in these pages in 1984, your present reviewer wrote 'there may be scope for a much wider work. Most individuals who deal with economists are more likely to come across a 'minor' rather than a 'major' one. No doubt *A Biographical Dictionary of Minor Economists* would not be the right title for a sequel . . . .'

Paul and Claire Sturges have now produced a book which covers both major and minor economists in Britain. Its aim is to provide a directory of the economics profession as a whole but it also includes economic historians and a few accountants who are located in university economics departments. As well as information about employment and qualifications, the entries contain a summary of the person's principal fields of expertise in economics and up to five of their most important publications. The book has been compiled from the information supplied by the respondents themselves though information about publications has been verified and expanded where necessary.

There is also a subject index which is an excellent way of guiding the reader to the particular specialities of British economists. It is based almost entirely on how the respondents have described themselves in the questionnaires and the results are sometimes a little idiosyncratic. The largest single entry is Development Economics which lists some 176 specialists followed by Labour Economics with 151. Sizeable entries also appear for Economic History, Forecasting, History of Economic Thought and Industrial Economics. At the other end of the scale there are many entries with only one recorded specialist on topics such as Agricultural Markets, Applied Labour Economics, Applied Welfare Economics, Behavioural Economics, Bond Markets, Company Finance and Comparative Accounting. Clearly many economists have been too modest to provide a full list of their specialities and do not appear to have known that the information was to be used to compile such an index. There are obvious difficulties in compiling such a list which is not based on information supplied by the respondents themselves. Nevertheless, as a modest suggestion for future editions, there appears to be considerable scope for rationalising the different topic headings in the subject index and then inviting the respondents to indicate which provide the most appropriate description(s) of their expertise.

The editors have clearly gone to some trouble to compile as complete a list as they can. While there are some gaps, this is almost inevitable where entries are based on questionnaires, particularly for those issued in respect of the first edition of a new venture. No doubt there would be fewer in future editions.

George Bernard Shaw may not have been quite right when he said that if all economists were laid end to end they would not reach a conclusion, but they certainly fill up a good sized directory.

University of Exeter   Simon James

Costing—An Introduction. *Colin Drury.* Chapman and Hall, 2nd. ed., 1990. xiv + 535 pp. £10.95.

This book cannot boast a glamorous title and would probably be bed-time reading for only the severest of insomniacs! However, within its limited objectives, this text is competent and useful. This second edition is a companion to Drury's well-known and more advanced text, *Management and Cost Accounting.* It is intended for use on a one year course in management accounting or costing and it presumes no previous knowledge of the subject. It is primarily aimed at students who are studying for professional or non-degree examinations and, although it states that it would be of use on a first level course for undergraduate students, I have grave reservations as to its suitability for such a purpose.

After two introductory chapters the remaining thirteen are divided into three sections, viz. cost accumulation for stock valuation and profit measurement, information for decision-making, and information for planning and control. These sections conform with the author's understanding of the three roles for costing; the first he describes as cost accounting and the latter two as management accounting. The first place where the book fails to live up to its claim to be suitable for a non-advanced accounting course is in its contents. There are important, basic topics in management accounting which are not covered, such as divisional performance measurement, transfer pricing and pricing generally. It would also be helpful to have some discussion of activity based costing in this new edition, but this is also absent.

The style of the book is a second limiting feature. Although designed as an introductory text, there is a considerable amount of detail in most of the subjects covered. This is seen in the book-keeping entries that are included, the minutiae of labour and material costs etc. This may be a necessity for professional examinations but it seems to have been included at the expense of a more thoughtful presentation of the issues involved. For any undergraduate course it must surely be important that students be directed to think a little about the underlying concepts, the rationales of differing procedures and the implications of the procedures adopted. This

book gives only brief passing reference to such matters.

Another consequence of this detailed procedural approach is that behavioural consequences are not considered as an integral part of the text. These issues are mentioned briefly at the beginning of the book but there is almost no reference when particular techniques or procedures are described. This leaves the impression that costing is remote from the members of the organisation in which the procedures are used.

Closely linked to the preceding comments is the tendency in the book to make highly prescriptive statements with little or no justification. For example, in the chapter on budgeting the following is to be found:

> The preparation of the budget should be a 'bottom-up' process. This means that the budget should originate at the lowest levels of management and be refined and coordinated at higher levels.

Whereas this statement may describe the budgeting procedure in many companies, it is not helpful to the student to make such sweeping generalisations without some qualification.

To return to my opening comments. As a text designed for non-advanced professional examinations, this book is comprehensive and useful. It is clearly written with many helpful diagrams, there are lots of examples, and a good selection of past exam questions (with Drury's answers available separately). However, I have my reservations as to its suitability for undergraduate degree courses.

University of Bristol   Stephen Lyne

Easson: Cases and Materials on Revenue Law. *David R. Salter and Julia L. B. Kerr.* Sweet & Maxwell, 2nd ed. 1990. xliv + 577 pp. £32

As Easson pointed out in his original preface, few areas of the law are so subject to regular and substantial changes as is Revenue Law. It is therefore important to understand the basic principles as well as the details of current legislation. In order to aid students' understanding of the nature of the British tax system this book provides leading cases together with a variety of other material drawn from Government Reports, White Papers and other publications. These include extracts from books such as Adam Smith's *Wealth of Nations* and the Report of the Meade Committee.

The precise aim of the book is therefore to illustrate the basic principles, the nature of the more important problems and the application of the law to their attempted solution. In this the

book succeeds. While, of course, there can be no substitute for the actual text of statutes in the study of Revenue Law, there is also the need for much background information of the sort that this book provides. It is clearly written and will continue to be of interest to students of law and related areas. The law is stated as at 30 June 1989.

Simon James   University of Exeter

Practical Financial Management. *Richard Dobbins and Stephen F. Witt.* Basil Blackwell, 1988. ix + 276 pp. £10.95.

There are many good books on business finance already available on the market, so one is bound to look at a new addition to the literature in a critical light. However, one of the problems with many of the established texts is that they are rather long and go into a level of detail that may be inappropriate for short and introductory courses, and consequently there is still room for new books on the subject, especially if they are reasonably priced and will therefore appeal to impecunious students.

Practical Financial Management by Richard Dobbins and Stephen Witt is a short text of fewer than 300 pages which covers a lot of ground. Its intended market is apparently MBA students, financial managers and undergraduates, and it aims to provide a practical introduction to finance. Whether in fact it is appropriate for a postgraduate course is somewhat debatable, but it would certainly be suitable for first and (possibly) second year undergraduate programmes, particularly where the topic is taken as a subsidiary subject.

The layout of the book is somewhat unusual, the text being arranged in three parts: on investment decisions, financing decisions, and financial policy and control. The first of these commences with a chapter on project appraisal, covering the topic in 10 pages, which include references to the risk return trade off and the capital asset pricing model (CAPM). This is followed by chapters on merger decisions and working capital management, both of which are treated as special applications of the project appraisal model. The text then changes gear with a much more ambitious chapter describing portfolio theory and the CAPM itself.

The second part of the book contains succinct chapters on capital structure, dividend policy, leasing, the integration of investment and financial policy decisions, and international financial management. This is followed by the concluding section of the book, which comprises three chapters:

on profit planning and control; cash planning and control; and ratio analysis in financial management.

The main problem with the book is that it probably attempts to do too much in the limited space available. Inevitably some topics have had to be ignored (e.g. there is no real discussion of the impact of constraints on capital investment decisions or of transfer pricing) or are dealt with in too cursory a manner (e.g. the nature of profit measurement; stock control, where the assumptions behind the economic order quantity model are not spelt out; and financial ratio analysis, where the limitations are inadequately discussed). By contrast, others are dealt with in probably too much detail. This is most obvious in relation to Markowitz theory, where the discussion is at an altogether different level to that which precedes or follows it, identifying the equations and even referring to quadratic programming. On the other hand, the eight page discussion of the CAPM is not entirely satisfactory—for instance, the requirements and assumptions of the model are not very well spelt out (although there is a mention of expectations operators!), and the discussion of why the market portfolio dominates and of efficient markets theory is inadequate. Moreover, the brief descriptions of portfolio performance measurement, pension fund management and the London Business School's 'Risk Management Service' are probably too shallow to be of much use to readers.

The chapters in the second part of the book on capital structure, dividend policy and leasing provide good summaries of the topics under review and include a brief reference to option pricing theory. However, whether it is appropriate for a text at this level to have appendices demonstrating dividend irrelevance in mathematical and graphical terms is debatable. The following chapter helpfully tries to integrate investment and financing decisions, although it would have been useful to emphasise at the beginning of the book that the two are really interdependent. The concluding chapter in this section identifies the problems that arise in an international context, but inevitably it is impossible to do more than provide a cursory treatment of the subject in the space of eight pages.

The final part of the book deals with fairly standard accounting topics, the first of the three chapters describing absorption and marginal costing, break even analysis, and standard costing. It also attempts to deal with profit measurement and external reporting accounting policies within the space of ten pages, which include a detailed example. Inevitably the coverge here is very shallow—so much so, in fact, that one wonders whether it might merely create confusion in the mind of the reader. The following chapter deals

with cash planning (which really relates back to the chapter on working capital management and might have been better dealt with at that point in the text); and the final one uncritically covers ratio analysis, giving numerous examples.

Most chapters contain numerical exhibits to assist exposition, and 'check lists' of practical points to remember are also widely used. Moreover, after each summary up to half a dozen study questions are given.

Overall, one is bound to say that the book is unlikely to appeal to many lecturers, if only because the treatment of the various topics is so uneven. There are better texts available at little extra cost which cover the ground in greater depth and which therefore would seem to be more appropriate for undergraduate and postgraduate courses.

University of Liverpool   Richard Morris

The Financial Reporting and Policy Effects of Partial Deferred Tax Accounting. *A. J. Arnold and B. J. Webb.* ICAEW Research Board, 1989. 59 pp. £10.00.

This Research Report, prepared for the Research Board of the ICAEW, states four objectives. The first is to assess whether partial rather than full deferred tax accounting (DTA)—or, to North American readers, partial rather than comprehensive interperiod tax allocation—is consistent with other UK accounting standards and the objectives of the standards programme. The authors allege 'evidence of major deficiencies in the accounting standards process', arguing that burgeoning deferred taxes under full deferral during a period of rapid inflation created political pressures that impelled the Accounting Standards Committee (ASC) to adopt partial DTA as a matter of expediency rather than sound reasoning. This appears to be a plausible interpretation of the historical record. The ASC's rationale for partial deferral contradicted both the reasoning it gave previously for full deferral and the tenor of other relevant accounting standards.

An empirical study of 60 public companies over the period 1975–1985 serves the remaining three objectives, which are to assess the change from full to partial DTA in terms of (1) effects on measures of financial performance and capital structure (found, not surprisingly, to be significant), (2) effects on user comprehension (some problems), and on company rankings by performance measures (not significant), and (3) 'real economic causes or effects' in the form of significant gearing and dividend policy differ-

ences between early and later adopters of partial DTA.

This Report is a valuable addition to the literature for two reasons. Firstly, it documents aspects of the development of DTA peculiar to the UK—the importance of the concept of 'prudence' (which overrides the accrual concept in the event of conflict), the high rate of voluntary adoption of DTA, and the move to partial deferral in contrast with North America's uncompromising adherence to comprehensive allocation. Secondly, some lessons of the UK experience are worth noting by other jurisdictions. In particular, significant changes in the tax system and in government fiscal policy that are assumed away by partial deferral became an inescapable reality in the UK in 1984. The same could happen elsewhere!

Curiously, the Report contains no explicit recommendations to its sponsoring body. However, the authors venture to 'suspect' that a conceptual framework is the key to quality accounting standards and resolution of financial reporting controversies—a somewhat precarious view in the context of DTA, given the failure of conceptual frameworks to close debate on this issue in the USA and Canada. The authors' analysis also strongly favours full deferral and a quasi-equity designation of certain deferred tax credits. These are also my own preferences. However, it needs to be acknowledged that accounting controversies endure because logically derived conclusions are only as compelling as the premises from which they are derived. Advocacy of flow-through (taxes payable) and partial deferral is based not on fallacious logic but on different premises than those underlying full deferral. Thus, for example, the validity of the authors' assertion that partial deferral treats an impermanent benefit as if permanent depends on whether the test of permanence is appropriate at the individual asset level (a full deferral assumption) or at the aggregate level (a partial deferral assumption), and, if the latter, on empirical falsification of permanence at the aggregate level. Also, while the observation that full deferral is 'more prudent' than partial deferral is beyond dispute, the appropriate weighting of prudence is not (and would hardly be settled by the generalisations of a conceptual framework).

It is remarkable that major Research Reports published by the Financial Accounting Standards Board and the Canadian Institute of Chartered Accountants (both in 1983) on Accounting for Income Taxes are neither mentioned in the text nor listed in the Bibliography. These publications provide additional insights and expanded discussion on many of the issues treated in the Report under review. This does not detract from the fact that the latter is a thoughtful and concise analysis

of a difficult issue, and warrants careful study both within and beyond the UK.

University of Alberta   Kenneth W. Lemke

A Profession in Transition: The Ethical and Legal Responsibilities of Accountants. *Belverd E. Needles, Jr., (ed.).* School of Accountancy, DePaul University, 1989. xii pp. 229, $10.00.

This book contains the proceedings of an accounting research symposium at DePaul University in September 1988. It includes the text of several speeches made at the symposium, as well as a half dozen research papers on related issues. Topics are not limited to 'ethics' per se and include many related issues ranging from independence and quality control issues to speculation on the future of the accounting profession. The issues discussed are timely and relevant to both practitioners and academics. Some of the research papers, however, may make for tough reading for practitioners and undergraduate accounting students. This text would be particularly useful in graduate level accounting courses and should be required reading in any ethics course.

The text of the keynote address, *'Integrity: The Key to the Future of the Accounting Profession'*, presented by Duane Kullberg of Arthur Andersen & Co., is an insightful look at changes occurring in the business world and what role the auditor will play in the future as a result of these changes. Kullberg discusses the importance of integrity to the profession in both the past and the future and how the accounting profession can best be served by shaping the future rather than trying to anticipate it.

In the first research paper, *'Quality Control Problems Related to Independence: Evidence From AICPA Peer Review Filings'*, Wanda Wallace examines AICPA peer review filings for evidence of independence related problems. Wallace summarises the filings by type of opinion, geographic region, firm size and a number of other categories. The following paper, *'The Effect of Auditor/Client Investments on the Perception of Auditor Independence'*, by John Lacey, reports the results of a questionnaire concerning auditor investments in or jointly with clients. The study concludes, among other things, that CPAs are more critical of independence issues than financial statement users or preparers.

In *'Pandora's Box: A Comparison of Federal and State RICO Statutes as They Affect Accountants'*, Welton *et al.* discuss the impact of such statutes on accountants and efforts to reduce RICO actions. Earl Keller and Jerry Arnold, in *'The SEC's Disclosure System: its Objective, its Evolution, and*

its Future', embark on a lengthy discourse on the SEC's disclosure system and recommendations for improvement. The authors' discussion of the EDGAR system and its potential impact on disclosure is the most interesting and informative portion of the paper.

Don Finn, in *'Ethical Problems in Public Accounting: The View from the Top'*, surveys AICPA members in public practice concerning their opinions of the most difficult ethical problem which they face. The most difficult problems were found in tax practice when a client proposed tax 'alteration or fraud'. In the final research paper, *'An Investigation of Perceptions and Attributes of the Concept of Auditor Independence'*, Lydia Schleifer performs an experiment to examine the relevance of independence in the audit process utilising CPAs, bank loan officers and financial analysts. The most significant finding is that the profession may need to consider degrees of independence rather than simply its existence or lack thereof.

The plenary address includes three final papers by Joseph Clark III, Robert Sack and James Gaa. All are interesting; in particular, Gaa's piece which models auditor and society behaviour using game theory. Overall the proceedings provide an excellent analysis of ethics related issues currently facing accountants which can be recommended it to practitioners and academics alike.

Case Western Reserve   Thomas R. Robinson
  University

Experience in Using Information Technology in Local Government Financial Management. *Geoffrey Fitton and Cyril Tomkins.* Charles Knight, 1990. 133 pp. £16.95.

There are two parts to this report. First, there is a general description of the state of IT in local government financial management, based on 32 authorities thought to be leaders in this field and gleaned from interviews and postal questionnaires. Second, there is a very detailed case study of a local authority which was not seen as a leader in IT but which was introducing a major change in its systems.

The first part deals with topics such as the overall philosophy with regard to IT, the strategy for implementation, the approach to a comprehensive financial management system, monitoring of developments in IT and measuring its effectiveness. Given that the sampled authorities are not representative of local government as a whole and given the essentially unstructured way the information was gathered and reported, the study is careful not to make too much of its conclusions.

The basic philosophy driving the IT developments was found to be the need for faster and improved financial information to departments, helped along by pressures for devolved financial management. The authors note a trend away from systems that relate to financial control alone and towards corporate information systems that embrace statistical information, efficiency measurement, communications and financial information. But although the sampled authorities were committed to IT developments, the report suggests that there was less commitment to developing a strategy; moreover, there is a suggestion that the county councils tended to have a strategy while the district councils did not. The study does not offer judgements about this—it offers its findings. It reports some reasons given as to why authorities felt they needed a strategy but it also reports one of the few county councils that did not have a strategy (because it felt that an officially agreed plan was impossible to prepare since there were so many issues that might affect it). In fact, this well sums up the first part of this research: it is rich in conflicting comments about the topic. In some cases it offers norms, established by the Audit Commission, for example, but while the weight of reported arguments may suggest where the authors' feelings lie, the study is not judgemental. What it is basically saying is that the world is complicated, and its purpose is to give the reader an idea of just how complicated it is. In effect the study is a sociological piece, in the older wider sense of that adjective, though not driven explicitly by theory. Notwithstanding the evident strength of this approach, there is perhaps a natural tendency to want to 'make sense' of all this. Indeed, one has the feeling that to some extent the research began in this mode. For example, the interview schedule included questions such as: what impact have the most significant updates had on financial management; have they led to changes in organisational power and influence; have they led to improvements in public accountability? The report includes data relating to these questions but its chosen style is not to offer answers.

The second part of the study is a natural extension of the first. Given that generalisations are being eschewed, the data from interviews and questionnaires can be enriched by a very detailed case study. The authors explicitly ask to be judged on whether 'they have captured the general nature of accounting life within a small local authority grappling with IT change' (p. 57). The case was a real one, made suitably anonymous. The details take over 20,000 words to describe, in 31 sections. These are complemented by the authors' comments on the details. Given the extensive nature of this case, there is no doubt that the authors have succeeded in their goal. As might be expected, the case emphasises how different

the 'real world' can be from that depicted in textbooks. This will probably not come as a surprise to practitioners, but for them there is the compensation of a wealth of detailed practical lessons that emerge. For students, the case will provide a useful supplement to textbook material, though the lessons to be learnt will not be particularly easy to find: the instructor will probably need a list of questions to be addressed to help in the search.

In summary, this report is of great value to practitioners of all kinds in local government. For those academics who believe in this kind of research it provides a useful contribution to demonstrating how complicated the practice of accounting is.

University of Birmingham   Rowan Jones

Auditors' Liability: Should the Government Intervene? *David Gwilliam.* Department of Accounting and Business Method, University of Edinburgh, 1989. 22 pp. £4.

This booklet reproduces the text of David Gwilliam's lecture in the annual Tom Robertson Memorial series at the University of Edinburgh in February 1989.

The subject of the lecture is the issue of possible changes in the law to limit auditors' liability and give protection against claims for negligence. The justification for such protection is examined skilfully, drawing on analysis of legal precedents and, depending on one's viewpoint, a realistic or cynical consideration of professional arguments for limiting liability.

The main discussion begins with a useful outline of the results of the 1986 Australian Company and Security Law Review Committee investigation of 'The Civil Liability of Company Auditors'. Although the suggestions of that Committee for limitation on liability have not been implemented, the interesting point is that they found justification not in any theoretical considerations concerning audits and auditors, but rather on pragmatic grounds regarding the possible effects of very high awards on audit firms and the lack of available insurance cover.

The case for limitation of liability in the United Kingdom is then evaluated following three lines of argument. First, the suggestion that the balance of legal judgement has shifted to the detriment of the auditor is examined with reference to significant recent court cases. Although the lecture was given before the House of Lords ruling on *Caparo*, David Gwilliam still concludes that there is little evidence that the balance of judgement is unfavourable to auditors.

The second line of argument concerns the possible effects that increased liability could have on the supply side of auditing, i.e. the incentives for audit firms to carry on in the audit business. It is helpful to have the economic arguments set alongside the more traditional legal and fairness points, although more could perhaps have been made of the 'insurance' hypothesis for auditing services in this section, and some practitioners might question the suggestion that higher insurance premiums can be passed on in higher audit fees. Again the conclusion drawn is that there is little evidence to suggest that auditing is becoming so high risk and unprofitable that firms will no longer want to carry out audits.

Finally, the argument that the current situation is 'unfair' to auditors because awards are made against them when others are also to blame is discussed, but this consideration of moral and public interest issues leaves the author unable to support limitation of liability for this reason.

The general approach adopted in the booklet is to challenge the validity of professional claims that auditors are disadvantaged at present and in need of protection, and practitioners will find little comfort in the conclusion that the arguments advanced are 'special pleading on behalf of a powerful and dynamic profession and one which already benefits from a substantial degree of statutory protection and support'. The subject of liability and its impact on the economics of auditing is an interesting one, particularly in the light of the reported practices of some companies who now request their auditors to sign 'Caparo exclusion' clauses. Overall, this booklet provides a useful evaluation of professional arguments as to why liability should be limited.

University of Manchester   Stuart Turley

Financial Analysis. *Bill Rees.* Prentice Hall, 1990. xvi + 515 pp. £17.95.

It says much about university teaching of accounting and finance in the UK that it has taken until 1990 for anything other than the most superficial student textbook in financial analysis to be written. This was to be expected. On the supply side, accounting education has been dominated by the profession's emphasis upon the intricacies of the preparation of accounts and the unending problems of standardisation. The emphasis placed by its teachers upon interpretation was similar to that accorded it by their auditing masters from whom they learnt their trade. It was simply a matter of calculating a ratio. Accountants were concerned with more difficult sums and the interpretation of a ratio was just a matter of common

sense. Alongside the growth of accountancy education has come corporate finance which grew out of financial economics, and merely added a normative aspect. Its teachers typically had a more academic background but little understanding of the preparation of accounts. However, this did not matter as an important thesis was that of efficient capital markets which could be invoked to prevent the analysis of information from being a central issue.

The demand side has long been dominated by the insatiable needs of the accountancy profession. However, more recently, coinciding with 'big bang', there has been an increase in demand for financial (as opposed to accountancy) training with the rise of 'financial engineering', complex new financial instruments and accompanying markets, and, of course, the hugely expanding MBA market whose customers demand to become instant experts. It has also been realised that there is a large premium on astute and rigorous assessment of financial information and that an understanding simply of the mechanics of preparation is insufficient, irrelevant and positively unhelpful for acquiring these skills.

There is one other element in the equation. This involves the development of financial databases and computer software for statistical testing and analysis. Whilst this has been a feature of US research, it has been commonly ignored in the UK which has largely continued its *a priori* tradition.

This background provides a necessary insight into the strengths, limitations and constraints of such a book. Clearly, it is necessary to examine both the role of information in the financial decision and how the underlying accountancy processes affect it. There are chapters on these, and the necessary institutional background. The meat of the subject is contained in the remaining chapters which deal with specific areas of financial decision making and the role of financial information. For example, mergers are one of the most important financial events from many different and conflicting perspectives according to how those involved are affected. All those involved place importance upon empirical evidence as revealed by published financial information, but also its extrapolation and the ability to forecast takeovers. In his chapter on mergers, Bill Rees therefore quickly covers the necessary theoretical issues about activity and motives in order to concentrate on such matters as the empirical studies of pre and post merger performance, the financial characteristics of acquired firms and predicting and identifying mergers. The chapter on accounting information and the capital market adopts a similar user approach.

There is no area of financial analysis that has received greater empirical research than the identification and prediction of business failure and bad credit risk. The empirical literature is full of

huge, and sometimes unwarranted, claims for the predictive ability of its models. While customers are legally protected from misleading advertisements and certain sales techniques, as yet there is little protection for the reader/buyer of statistical prediction models other than academic criticism that such claims may engender. Whilst these criticisms are put rather differently here than in the research literature (and some pretty fundamental ones ignored), Bill Rees deserves credit for raising them in order to stimulate critical assessment. For example, there is (rightly in my view) more text devoted to the criticisms than to the presentation of the results.

This raises the fundamental problems of a book of this kind. Because the subject is so applied, theory is placed in a rather uncertain position. This is not the biggest problem. Much of the empirical work raises difficult and genuine econometric and statistical problems. In the UK at least, there are few researchers and teachers who can easily cope with both the statistical and accounting problems contained in the empirical studies. Here, whilst attention is often drawn to the statistical technicalities of the empirical studies, the basic statistical issues giving rise to technical attention are not considered. This does not help critical assessment of the research. For example, separate chapters on time series and cross-sectional analysis are provided which cover the context and the details of the empirical studies. However, there is no mention of those fundamental problems of econometric estimation of multicolinearity and autocorrelation in cross-sectional and times series work. It may be argued that this is merely a matter of consulting an econometrics textbook. However, what may be an important estimating problem to the econometrician may not matter to the financial analyst, and vice versa. Also, the way around well-known statistical problems may be by means of quite standard procedures. Without such knowledge it is difficult to assess whether an empirical study has been properly conducted. It seems vital for such a book as this that the basic statistical problems, and their resolution, be included.

There is one final point. Little attention in the UK has been paid to the other side of the coin which has emerged during the last decade. This refers to the manipulation of accounting data and creative accounting. The greater the emphasis placed on the use of financial data, the greater will be the need and desire to manipulate it. This has not been ignored by US researchers. The 'income smoothing' hypothesis has long been researched. More than a single page should have been devoted to it here. There is also the emerging use of financial analysis and statistical techniques for regulatory control and the identification of fraud.

The criticisms raised here reflect the state of academic financial analysis, particularly in the UK. We should not expect a student textbook alone to resolve them. Overall, Bill Rees provides an excellent presentation in which the details and criticisms of the empirical studies are the main feature.

University of Nottingham   Paul Barnes

Company Accounts. *Maurice Pendlebury and Roger Groves.* Unwin Hyman, 2nd ed., 1990. viii + 280 pp. £9.95 PB.

This book is designed to explain and analyse UK company reports and accounts and is aimed at MBA students, undergraduates on management and business studies courses and also at any users of financial statements who need to understand and interpret the information in annual reports. In other words, its target is the non-specialist student and user of accounts. To my mind there is definitely a market for such a book, and I am often asked to recommend one. However, I am left wondering whether this is it. Non-specialists will find much of the detailed content beyond them unless they have a fair amount of accounting knowledge, but a reader with an accounting background will find the approach too basic in many cases.

The book is divided into two sections, but first comes an interesting introductory chapter on the purpose, regulation and format of company reports which covers many important topics, both theoretical and practical. However, it does have a serious flaw in that the Dearing Report's proposals, most of which are now implemented, are mentioned only in passing. This is the first sign of one of the book's drawbacks—despite being published in June 1990 it is not up to date on several recent developments in company law and accounting standards.

Part one of the book (chapters 2 to 8) reviews the principal items to be found in a typical annual report and accounts in some detail. The authors make use of The BOC Group plc as their example and substantial extracts of the group's report and accounts for the year to 30 September 1988 are reproduced as Appendix A—a useful feature. While these chapters have few technical faults I was doubtful as to whether the amount of detail they contain is really appropriate for the market being aimed at. They consist of a thorough look at more or less every significant item in the accounts and the associated legislation or standard, plus occasional digressions to explain technical or practical points. Some contradictions arise as a result of this—for example on page 28 the authors state that 'it is not the intention of this book to explain the techniques

and rules of accounting', and promptly launch into a three page explanation of the FIFO and LIFO methods of stock valuation. As already noted the book is out of date in a few places. Another example is the frequency with which the need for and lack of segmental data is commented upon, without mention of the 1988 exposure draft (now a standard) on the subject. However, despite these criticisms there are many parts that are well worth reading. Chapter 7, on 'Other reports and statements', is an interesting if uncritical survey of what has happened to the new types of statement recommended by the *Corporate Report*. Chapter 8 on 'The auditors' report' is a useful chapter that may well correct many common misapprehensions.

Part two (chapters 9 to 15) concentrates on interpretation and assessment using BOC's accounts as illustration. The technique used is ratio analysis and it is carefully explained and discussed in chapters 9 to 13. There is no doubt that some accounting knowledge is being assumed here. Subject to that, these chapters made interesting reading and a non-specialist with a business background should find them valuable. More emphasis could and should have been placed on the pitfalls of ratio analysis. Some of the main problems, such as inflation, are mentioned but only in passing. One problem of using a single set of accounts as an illustration is that the applicability of the techniques used to other types of company is not covered.

Chapter 14 contains a useful structured approach to the analysis of financial statements which brings in most of the aspects of fundamental analysis. I had one small quibble here: BOC's accounts were used as the illustration but no overall conclusion was drawn about the company, which leaves the reader hanging in mid-air. Chapter 15 covers other uses of financial ratios and is good but technical.

The Appendices contain some useful data. Appendix B covers sources of comparative statistics and data—something of interest to many professional users such as credit analysts. This Appendix is by no means comprehensive and could well be expanded. Appendix C contains a glossary of accounting terms and D of ratios, both useful for reference (and arguably very necessary for non-specialists).

My overall feeling about this book is that if the authors had aimed successfully at the non-specialist reader it would be a very good and useful addition to the literature in this area. Chapters 2 to 6 could be cut down without loss and Chapters 9 to 13 angled more at those with little or no accounting background. It is a shame that it is already out of date in several areas. However, it is still good value for money and readers ought not to let themselves

be put off by its rather old-fashioned format and layout.

London School of   Judy Day
    Economics

The Evolution of Consolidated Financial Reporting in Australia. *Greg Whittred.* Garland, 1988. vii + 183 pp. US$30.

This book is based on the author's PhD thesis. Its primary objective is to explain the causes of the development of consolidation in Australia, particularly in cases of voluntary adoption. In some ways it follows on from the thesis by Bob Walker (1978), also from Sydney and published a decade earlier. In pursuit of his aim the author also uncovers evidence about (i) consolidation practices and compliance with rules in Australia in the middle decades of this century, and (ii) the evolution of the holding company in Australia.

The book begins by tracing the changes in regulations from the 1920s, and then identifies voluntary consolidators. One of the problems is that both law and stock exchange rules did not insist on consolidation until surprisingly recently, although proposing it as one method of group accounting (from 1938 in Victorian law) or requiring it for some companies (from 1941 for new listings). Similarly, consolidation did not become legally the compulsory form of British group accounts until the 1989 Act.

Chapter 3 examines the evolution of Australian capital markets, and particularly the market for debt capital. An association is perceived between (i) the growth of consolidations between the late 1940s and the early 1950s, and (ii) developments in debt markets. Interestingly, a dramatic growth in consolidation also occurred in the UK at just this time, and has been put down to the influence of the 1947 and 1948 Companies Acts (Bircher, 1988), although these Acts only insisted on group accounts not on consolidated accounts. Given the strong links between Britain and Australia at this time, did Bircher miss any change in British debt contracts, or was something else driving consolidation in both countries?

My reading of the author's data on the growth of consolidation in Australia is that it was well under way *before* the major changes in the debt market. Is it not possible that debt contracts were written in terms of consolidated accounts by the 1950s merely because the latter were seen by auditors, textbooks, accountancy journals and international comparisons as the respectable thing to do, rather than because of calculations of agency costs and benefits? There would still, of course, be a connection between the writing of debt contracts

and the adoption of consolidation. We might gain some insight from asking the relevant retired accountants what motivated their behaviour.

Chapter 4 considers the contracting problems between managers and financiers, setting up hypotheses about when consolidation is likely. Chapters 5 and 6 test these hypotheses, using voluntary consolidators and non-consolidators. Several associations are found. Chapter 7 examines the effects of overseas influences, auditors and taxation.

In summary, this book presents detailed and interesting evidence about the growth of consolidation in Australia. In addition, the author suggests, but in a cautious way, a linkage between debt covenants and the adoption of consolidation. However, I am not fully convinced that either the managers or the financiers were sufficiently sophisticated in the 1940s or 1950s to appreciate the benefits of:

> contracting procedures aimed at firm value maximization by preventing (or facilitating the detection of) opportunistic behaviour by managers (p. 118).

The author notes that contracts were usually associated with restructuring of operations, ownership or management. It is easy to see that the combination of the new contracts and the restructing might often lead to a change in financial reporting, normally in the direction of what was regarded in the UK and the US and by some leading Australian commentators as modern sophisticated accounting.

University of Reading   Christopher Nobes

References

P. Bircher, 'The Adoption of Consolidated Accounts in Great Britain', *Accounting and Business Research*, Winter 1988.
R. G. Walker, *Consolidated Accounts* (New York: Arno Press, 1978).

Brand and Goodwill Accounting Strategies. *Michael Power (ed.).* Woodhead Faulkner, 1990. xii + 127 pp. £75.

Accountants may not have standardised the way they account for brands but they appear to have been more successful in standardising the way they *argue* about accounting for them. This version of the document, which has not so far been published, is inferred from practice:

1. This standard applies to all books and conferences designed to reflect the 'state of the art' in brand accounting.

2. It is a fundamental principle of all such books and conferences that they should be *very expensive indeed*.

3. Somewhere early in the proceedings *Peter Holgate* should give an historical overview of the goodwill debate, demonstrating that the brand accounting controversy emerges as a natural consequence of this debate.

4. *Martin Moorhouse* should then give an impassioned plea for capitalisation of brands, arguing that (a) proper accounting demands it and (b) RHM would still be selling Hovis from a single shop on the corner of a cobbled street if it had been prevented from capitalising its brands.

5. At about this point *Paul Rutteman* should enter a note of caution. Following careful consideration the Accounting Argumentation Standards Board has determined that mention of possible legal difficulties is not mandatory.

6. At least one chapter from the LBS study should be included in whole or in summary.

7. A brand valuation expert should demonstrate that, although brand valuation generally may be inherently subjective and seriously hazardous to the insurance premiums of accountants everywhere, he or his particular method satisfies all known accounting criteria. The use of the term 'methodology' in this context is discouraged but the AASB nonetheless accepts that everyone will in fact use it. Every effort should be made to ensure that the expert concerned represents the *Interbrand Group* but others may be used should no one from Interbrand be willing to make a contribution, which is unlikely.

8. Throughout the book or conference extensive use should be made of the terms *real world, reality* and *realistic*. These need not be defined but care should be taken not to employ then in the context of accounting for tangible fixed assets or the use of historical costs generally.

The product under review fully complies with the above standard. Seriously though, it is better than many that your reviewer has seen. It is well-edited and well-produced. Paul Rutteman's contribution provides an authoritative statement of the argument that won the day in ED52, although whether it emerges as the final winner remains to be seen. Brian Sturgess' piece presents a user's perspective and sets out the argument against capitalisation with great clarity and force: where markets are efficient they do not need the information (the preparation of which itself consumes shareholders' funds) and where they are not efficient they will be fooled by the variety of inconsistent methods peddled by consultants. The volume would have been more interesting if Sturgess and Moorhouse had been invited to comment on each other's pieces, but then the Standard does not encourage this sort of thing.

What, however, is one to make of the fact that the authors of one of the 'impassioned pleas' (this time against amortisation on the grounds that 'real

world values' (p. 23) are in fact rising) are from British and Commonwealth? There is no technical problem here; the impact of B&C's problems with Atlantic Computers and the withdrawal of their SIB authorisation could (and no doubt would) be reflected in one-off write-downs, but if ever a reminder was needed of the impermanence of goodwill. . . . Didn't the Greeks have a word for it?

University of Kent   Brian A. Rutherford
    at Canterbury

Accounting in Australia: Historical Essays. *Robert H. Parker (ed)*. Garland Publishing Inc., 1990. 559 pp. US$95.

Australian accountants and other interested parties owe Bob Parker a tremendous debt for the fine collection of historical works that he has assembled in this volume. Garland Publishing is also to be complimented for the quality of production of this volume which will constitute an important data base for future historical accounting research in Australia. Perhaps it is symptomatic of Australia's history that we have had to wait for a British professor to assemble and edit such a volume. As the editor himself observes in his introduction to this volume, many Australian academics have focussed their publishing efforts in countries outside Australia. Certainly one could be forgiven for deducing that Australian accountants still suffer a considerable degree of immaturity in their outlook. It is arguable that many (including the academic contingent) still look to overseas locations for self-confirmation of their credibility while at the same time, by and large, they suffer a preoccupation with contemporary issues and a complete lack of appreciation of the history and traditions that already underpin the Australian profession today. For these reasons, Bob Parker (a quasi-Australian given his regular reappearances 'down under'?) is to be applauded for recovering and collecting material that will undoubtedly be of great benefit to future accountants and particularly to accounting historians.

The papers and extracts published in this volume are grouped under the following categories:

1. Early Accounting Records
2. The Financial Year
3. Corporate Financial Reporting
4. Audit
5. Professional Accountancy
6. Accounting Literature
7. Biographies and Bibliographies

Among the authors included in this volume are Goldberg, Gibson, Morris, Whittred, Zeff, Gavens, Walker, Anderson, and the editor himself.

Indeed there are four pieces by Gibson and two by each of Goldberg, Morris, and the editor.

In the introduction to the text, the editor provides a brief overview of the papers included in each section as well as some editorial asides. Amongst these asides is the suggestion that the historical Australian accounting literature has been predominantly private sector oriented while the reality of Australian accounting life may suggest a greater influence of public sector activity. This raises fascinating issues that should attract future accounting history researchers in this country.

Some aspects of the text quite naturally reflect the editor's own particular interests. In the introduction, the section accorded the most space for editorial comment is that of 'Corporate Financial Reporting'. The inclusion of a section entitled 'Biographies and Bibliographies' reflects an abiding research interest of the editor's. It is a valuable collection. The editor correctly notes that biographies of Australian accountants represent a severely neglected area in the Australian accounting literature. The bibliographies that are provided (a bibliography of Australian cost accounting literature and a chronological list of books and articles on Australian accounting history) represent very valuable collections that will now be generally available to accounting researchers via this volume.

A fascinating little section, which appears in the first instance as a curiosity item, is the one entitled 'The Financial Year'. It comprises two articles discussing the derivation of the Australian financial year, authored by Arndt and Marsland. In fact, they illustrate the influence of Australian public sector history on Australian private sector accounting. The material certainly provides an excellent example of the editor's assertion in his introduction that the influence of Australian public sector accounting and management has probably been underestimated in the Australian accounting literature.

Particularly in the section on 'Professional Accountancy', Bob Parker conforms to a principle that he spelled out to me when I was one of his lecturers at the University of Dundee. He has always argued that the value of a book of readings such as this volume must be partly derived from its publication of articles that hitherto have been inaccessible to general readership. Bob has upheld this ideal and as a result has provided us with some fascinating material which otherwise might well have been lost to the current generation of accounting history researchers and readers.

All reviewers must be allowed some degree of licence for pedantic criticism. It is part of the intrinsic reward for undertaking the role of reviewer. This reviewer is nonplussed by the appearance of a textbook extract authored by R. J. Chambers in the section 'Accounting Literature'. It

simply does not fit with the rest of the readings in the section. The other papers reproduced are reviews of relatively early accounting literature and writers in Australia and are pre-1950. The Chambers piece is a reprint of 'The Development of the Theory of Continuously Contemporary Accounting' from the text *Accounting Evaluation and Economic Behavior*. Since Chambers gets an inevitable guernsey elsewhere in this volume, this piece's appearance can hardly be the result of a desire to include Chambers at all costs! The reasons for its inclusion must therefore remain a mystery (at least to this reviewer).

In conclusion, this is clearly going to be a most valuable volume for many years to come. Nevertheless its contents do reflect the predominance of narrative, descriptive and technicist histories that have been the hallmark of accounting history literature over the last 20 or 30 years. This predominance reflects the essential foundation work of accounting historians in providing invaluable raw data for future historical researchers to build upon. At the same time it reflects a regrettable immaturity in a considerable proportion of accounting history scholarship (in comparison with its sister disciplines of economic history, social history and general history). The accounting history literature still suffers a lack of explanatory investigative studies, critical investigations of the relationships between accounting practices and their socio-economic and other environmental influences, and an almost complete reliance on narrative historiography with little reference or resort to other traditions of historical method and historical writing. This observation is not to decry the efforts of some of the founding fathers of the accounting history tradition. They have laid important foundations upon which subsequent generations of accounting historians must build. May the best be yet to come.

The Flinders University   Lee D. Parker
of South Australia

Audit Reports on the Financial Statements of European Multinational Companies: A Comparative Study. *Simon Archer, Stuart McLeay and Jean-Bruno Dufour.* ICAEW Research Board, 1989. 99pp. £10.

European companies with multiple listings are increasing in number and are interesting in that they explicitly offer their securities to an investor community beyond their national borders. The financial statements which are produced for this international audience are all audited but there is variation in the content and wording of these audit reports. Archer *et al.* set themselves the objective of comparing the audit reports in question using a set of criteria based on internationally developed guidelines.

The authors identified 245 European companies with multiple listings during the period 1985–1987 and were able to examine the audit reports of 206 of these companies. The distribution across Europe covered 16 countries, including the United Kingdom and Eire, but was uneven, as might be expected, ranging from 35 respondents located in West Germany to 2 respondents based in Norway.

The benchmarks used for comparison were the International Auditing Guideline IAG 13 issued by the International Auditing Practices Committee in 1983 and the statement ASB 8 issued in 1981 by the Auditing Standards Board of the Union Européenne des Experts Comptables Economiques et Financiers (UEC). Although the UEC has ceased operations, the ASB statement could still have had an influence on practice in 1985–1987, the period covered by the research.

The main thrust of the research report is a detailed discussion of the national practices in the form and content of the audit report, distinguishing European Community member states from other European countries. For each country there is a description of the institutional context of the audit reporting function, a representative example of an audit report in the native language and, where necessary, an English translation. Compliance with IAG 13 and ASB 8 is evaluated qualitatively in each case.

The authors also attempt a quantitative analysis of variability in audit reporting practice and compliance with IAG 13. Variability in audit reporting practice is assessed by an invariability index which indicates the extent to which audit reports of specific companies in any country differ from the audit reporting practice adopted by the majority in that country. Compliance with IAG 13 is evaluated by counting how many of the principal recommendations of IAG 13 are followed. It is reassuring to those who sat through the World Cup and agonised over penalty shoot-outs to know that it is still possible to devise two different scoring schemes which ensure that UK and Eire come out on top in both cases, although both need the help of the second decimal place to beat Italy.

The problems of translation are also explored, particularly where the translation incorporates a change of tone which may not adequately convey the original message. For example, should 'Wir konnten uns ferner uberzeugen' be translated into French as 'Nous avons pu nous convaincre' or as 'Nous avons pu nous assurer'? A further problem may arise where the translation refers to auditing standards without clarifying which nation's standards have been applied.

The research report is informative and well written. On the authors' own admission it is essentially descriptive and indicates some very obvious areas of further development in finding explanations of the differences observed. They suggest market reaction studies to assess the impact of foreign language versions, as well as questionnaire and interview surveys to evaluate beliefs and objectives of preparers and users. One difficulty with the data is that, not surprisingly, there is a lack of qualified audit reports on these top-ranking multi-listed companies, so that the ~~~~interesting and controversial aspects of audit reporting cannot be explored in this particular context. It may well be the case that all unqualified audit reports are treated by the reader as effectively representing a 'tick' for satisfaction, with no more regard for the wording than a glance at the audit firm's name.

University of Glasgow   Pauline Weetman

Capital Investment and Financial Decisions. *H. Levy & M. Sarnat.* Prentice Hall, 4th. ed., 1989. xiii + 711 pp. £34.95.

This book has established itself in previous editions as one of the standard corporate finance textbooks, and this fourth edition ensures that it will continue to hold its eminence in the face of an ever-increasing number of competitors. As in previous editions the theory of finance is developed from capital budgeting under certainty, through risk, diversification and asset pricing, to capital structure, dividend policy and other sources of finance. Each chapter includes a verbal and elementary algebraic explanation of the main points under discussion, and concludes with a summary section and a large number of numerical exercises.

The main changes in the new edition are two new complete chapters on international financial management and growth by merger which were glaring omissions in the past.

The chapter on options has been extended to include futures and portfolio insurance. There is now a very succinct and intuitive introduction to the arbitrage pricing theory, and a discussion of the effect of the 1987 crash on the cost of capital. Sensibly, the new edition cuts back on capital rationing, taxation and inflation considerations. Although the book is primarily geared to an American audience, as in the discussion of the 1986 tax changes on Miller's personal taxes argument, the authors do make attempts to be more general at other times.

Overall the book lies midway in complexity and analytical technique between Brealy and Myers (1988) and Copeland and Weston (1988) and as

such remains an ideal third year undergraduate textbook on corporate finance.

University of Exeter   Ian Tonks

Essays in Honour of Louis Goldberg, *Kerr, Jean St. G., and R. G. Clift (eds),* Department of Accounting and Business Law, The University of Melbourne, 1989, vi + 313 pp. A$

This Festschrift in honour of Louis Goldberg contains twelve articles written by his friends, colleagues and former students, and a list of books and articles written by Goldberg himself between 1935 and 1988. The book is produced in typed camera-ready copy which looks a little primitive in these days of desk top publishing. The average length of each article is 8,000 words. Eleven of the articles are new additions to the literature, with one item (by Staubus) a revised version of an earlier paper reproduced with the permission of Garland Publishing. Many of the authors draw on earlier work by Goldberg as the starting point for their present study. The papers are of mixed quality, which is perhaps not surprising in view of the fact that, in this kind of book, a major contribution to the accounting literature is perhaps not always the principal criterion when choosing the contributors or when they, in turn, decide upon the topic to explore. The book will particularly appeal to those interested in obtaining some familiarity with Australian financial accounting thought and practice.

I was unable to perceive any overall logic in the order of paper presentation, but the book appropriately begins with the editors' tribute entitled 'Louis Goldberg—Educator and Scholar'. As is perhaps appropriate in such a volume, it represents an uncritical acclamation of his achievements. But there is no doubt that he did make an enormous contribution in a number of areas. For example, from the 1930s until the 1960s, Goldberg was one of the few accountants actively attempting to convince practitioners, professional accounting bodies and university administrators that accounting was something more than a technical craft. As late as 1965, when I embarked on an undergraduate accounting degree, Goldberg's *An Outline of Accounting* (which started life as *The Philosophy of Accounting*, 1939) was one of a small handful of books which could be relied upon to help the student think instead of merely learn.

'Is Business Income Measurable?' Russell Mathews argues that 'the conventional accounting concepts of business income and capital are neither measurable nor relevant to the purpose for which accounting information is required' (p. 44). Mathews instead advocates the use of the cash flow statement for measuring operating performance

and a Chambers style net wealth statement to report the financial position. As in a number of other papers in this book, I found the determination to choose between accounting statements, by advocating the merits of one and acknowledging only the limitations of the other, a litle one-sided. 'Decision—Useful Theory, Activity Costing, and Market Simulation Accounting' (George J. Staubus) is a short, thought provoking piece, which seeks to tie together three lines of work on which Staubus has been engaged over the years: the development of the decision usefulness theory of accounting; activity costing; and market simulation accounting.

'In Defence of Funds Statements' (Clift) considers the relative merits of three 'funds' definitions: cash, working capital, and all financial resources. It is a rather lengthy examination of the growing support for cash based statements drawing on the pronouncements of regulatory bodies and the literature in general. Surprisingly, it contains no explicit discussion of the implications of off-balance-sheet transactions for the relative merits of the above three methods of measuring financial resource movements.

The next two papers are concerned with the regulation of accounting practice in the 19th and 20th centuries. 'Reflections on the Limits of Legislation Relating to Financial Reports' (Trevor Johnston) demonstrates the continued application of a selection of different objections voiced, during the 19th century, against proposals for requiring greater publicity from joint-stock companies. He points to the difficulty of making regulations effective unless the vast majority of participants are keen to 'play the game'. An element of personal pessimism concerning the likely outcome, with which I have some sympathy, is implicit in his conclusion that it is better to continue with the endeavour than to give up.

A weakness of Johnston's paper, highlighted by the one that follows, entitled 'Regulating British Corporate Financial Reporting in the Late 19th Century', is the failure to reconcile the legislature's treatment of joint-stock companies in general with those engaged in the provision of transport, public utilities, and financial services, where a high degree of regulation was introduced, accepted, and arguably made effective during the 19th century. Why were these latter organisations regulated when joint stock companies in general were left to the vagaries of market forces, or what we would today regard as the impact of agency theory? According to Parker it was because financial reporting requirements were needed for reasons *other* than shareholder protection. More specifically: to help prevent companies from exploiting a monopoly position by, for example, using accounting information to monitor and control their profits; to enable the government to examine the progress of

companies, explicitly created by Parliament, in order to make sure they were not abusing their powers; and for the protection of non-shareholder groups such as, in the case of financial institutions, depositors and policy holders.

J. K. Courtis methodically traces the influences of, and requirements introduced by, various regulatory bodies, concerning the content of the prospectus, in the aftermath of Sydney Guarantee Ltd (1960) and Reid Murray Acceptance Ltd (1962). The paper concludes with a series of suggestions for research into the purpose and usefulness of this statement.

The next two papers deal with the treatment for financial reporting purposes of the following two financial magnitudes: depreciation (C. J. Warrell) and equity (Kerr). In contrast with some of the earlier papers, Warrell is not at all convinced that it is sensible to avoid the problems associated with calculating goodwill by switching to cash flow statements: 'To use the cash flow statement is to play ostrich, hoping that the need to estimate the cost of the use of depreciable assets will go away by being ignored, while if we are able to estimate future cash flows we may also measure depreciation with at least the same degree of accuracy' (p. 174).

'Accounting for Foreign Operations in an Age of Fluctuating Exchange Rates' (Allan D. Barton) deals with a topic of particular relevance to Australian financial reporting practices in view of the significant depreciation of the Australian dollar against all major currencies since the adoption of a floating exchange rate in December 1983. It is followed by a paper (S. A. Leech) which examines the way in which expert systems can help accountants.

The volume ends with 'Glimpses of A. A. Fitzgerald' provided by G. H. Burrows. The specific relevance of this paper, in the context of the Festschrift, is that it deals with 'Goldberg's mentor and professorial predecessor' (p. 278). Fitzgerald was clearly a prolific writer and, as his career progressed, heavily engaged in professional and governmental work. However, this is a sketch of Fitzgerald's personality. It makes no attempt to analyse or assess his professional and academic achievements, though a description of the various posts he filled and the enquiries on which he was engaged form a substantial part of the paper. It is an oral history based on the impressions of Fitzgerald's family and former colleagues. According to Burrows 'all the individuals quoted here were his admirers' (p. 294). Oral history is beset with problems, including how you specifically attribute findings to sources, and the related question of how much of the interviewee's comments are to be reproduced. This particular presentation is mainly in the form of a synthesis and distillation of findings, with the reader left uninformed of the

source of much of what is said. Those who share an interest in gossip will be glad to know that Fitzgerald's diaries tell us that Eric Kohler held A. C. Littleton in 'high regard', considered that G. O. May's 'advocacy of LIFO, etc., [was] based on the interests of business' and that W. A. Paton was a 'conceited economist rather than accountant' (p. 288).

Cardiff Business School   J. R. Edwards

The Liquidation/Merger Alternative. *Michael J. Peel.* Avebury, 1990. xi + 192pp. £30.

The central question in this study is whether statistical models using data drawn from companies' annual reports can discriminate between financially distressed companies which fail, on the one hand, and those which merge in order to forestall bankruptcy, on the other. It develops an earlier study for the United States by Pastena and Ruland. It focuses on UK quoted non-financial companies in the period 1972 to 1979. Three samples are compared—40 failed companies, 32 pre-selected 'distressed acquisitions', and a control sample of 40 surviving companies. Sample means are compared for a range of potential explanatory variables and then logit and discriminant analysis is carried out in an effort to discriminate between the samples on the basis of various financial variables.

The key findings are that, firstly, prospective failures are more acutely distressed than those subsequently saved by merger; secondly, in contrast with US findings, company size and variables representing the ownership/control structure of the companies did not differ between failures and distressed acquisitions; and, thirdly, tax loss carry forwards proved to be insignificant predictors of whether a distressed company would fail or be taken over.

The book has two principal strengths. It offers a systematic and competent analysis of a substantial set of data which contributes to knowledge of the characteristics of failed companies and of distressed acquisition targets. And it provides a clear review of previous work on takeover and failure, drawing on a wide range of academic literature (in accounting, finance and industrial economics) as well as on contributions from practitioners in more journalistic publications.

Three weaknesses of the study suggest themselves. Firstly, one of the author's principal conclusions—that prospective failures are more distressed than prospective distressed acquisitions—may not be very firmly based. It is highly sensitive to the a priori criteria of distress which he uses in order to select a sample of distressed

acquisitions from among the much larger total population of acquisitions. There are no uniquely appropriate criteria and strengthening the ones he uses would weaken or even reverse his conclusions. Secondly, as the author notes regretfully, his basic data were limited: they were not computerised, which meant that his analysis was restricted compared with US predecessors; and they ended in 1979, so there is a problem of timeliness. Thirdly, although the presentation has some very good features (including clear chapter summaries), it does also irritate at times: tables are tucked away in appendices and do not include enough explanation to make them comprehensible without extensive searching through the text; and the model specification and testing are presented *before* most of the theory and literature review, which produces some repetition and, more importantly, makes it harder to appreciate the significance of the empirical results.

Despite these qualifications, this study is a helpful addition to the literatures on company failure and on merger.

Geoff Meeks   University of Cambridge

Accounting and Financial Reporting in Nigeria. *R. S. Olusegun Wallace.* Institute of Chartered Accountants in England and Wales, 1989. xix + 247 pp. £16.95.

Accounting and Financial Reporting in Nigeria is an excellent example of descriptive international accounting research that draws heavily on the existing literature, develops a framework for analysis, and applies that framework in a country setting. The book is very useful, not only as a description of Nigerian accounting, but also as a model for descriptive and comparative studies. Anyone who is interested in this type of research involving countries other than Nigeria should read this book as a model for their research.

The book is a study prepared for the Research Board of The Institute of Chartered Accountants in England and Wales. As noted in the preface, the main purpose of the book is to enable Nigerians and non-Nigerians with a special interest in financial reporting and auditing in Nigeria to understand the main rules, regulations, practices and institutional arrangements in these fields. The book provides a detailed description of the growth and present state (June 1988) of accounting regulation, education, profession, and practice in Nigeria. It describes the various forms of business enterprises and the banking, financial and taxation systems in the country. A survey of the accounts of a sample of companies quoted on the Nigerian Stock Exchange is provided together with a discussion of the factors which may

account for the varying levels of disclosure in the country.

The book is divided into two parts. The first part deals with the Nigerian environment and its accounting profile, and the second part provides an empirical study of financial reporting in Nigeria. Chapter 1 provides an overview of the political, economic, financial and cultural environments in Nigeria. A useful contribution of the chapter is a figure that identifies the national and international determinants of corporate financial disclosure in a country. The figure identifies a number of sources of influence that are typical of a developing, especially African, country. It is a very useful taxonomy of the factors influencing the development of accounting standards and practices.

Chapters 2 and 3 focus on the accounting profession and accounting education. As noted at the end of Chapter 3, the main problem of the accounting educational system in Nigeria is the production of accountants suitable for the economic development of the country, rather than those suitable for developed countries. The author argues for innovation and adaptation rather than imitation or duplication. This requires an understanding of local perspectives.

Chapter 4 describes accounting regulation in Nigeria and does an excellent job of describing Nigerian accounting regulation in the context of influence by the United Kingdom. As the author points out, Nigeria relied heavily on British accounting principles prevailing before the 1967 Companies Act, then relied on standards issued by the International Accounting Standards Committee from 1977–1985, and finally developed its own standards. The Nigerian Accounting Standards Board (NASB) has been issuing standards since 1982, and the chapter describes that process and how the Board interacts with other national and international standard-setting bodies.

In Chapter 5, the author continues his discussion of the standard-setting process by looking at the various accounting regulatory agencies in Nigeria. He does an excellent job of discussing the theory of accounting choice and how it relates to the Nigerian environment. This theoretical context helps the author go beyond most descriptive studies that one reads in the literature. The standard-setting process followed by NASB is discussed in the chapter, as well as the major standards issued up to January 1, 1988.

Chapter 6, the final chapter in Part 1, discusses the tax system in Nigeria and its influence on accounting. The tax system is heavily influenced by the British, but it does not determine accounting standards and practices for financial reporting. That is consistent with the British model and different from what is found in most of continental Europe.

The tax authorities actually rely on financial reporting regulations for tax purposes.

Chapter 7 discusses the importance of disclosure items and describes the research methodology. The empirical study attempts to assess the perceptions of financial statement users on selected items of information. The term 'users' is expanded from the usual investors, creditors and financial analysts to include government users, an important group in Nigeria. A questionnaire was sent to potential respondents, who evaluated each of 102 disclosure items on a five-point Likert scale to see how important it was for each item to appear in corporate annual reports issued by enterprises operating in Nigeria. The questionnaire was sent to 1200 subjects drawn from six user groups: chartered accountants, investors, civil servants, managers, financial analysts, and other professionals. In addition, the questionnaire was administered to the 25 non-Nigerian board members of the IASC in order to get an international comparison. The major conclusion that the author draws from his study is the lack of consensus between accountants as a user-group on the one hand and all the other user-groups in Nigeria on the other. The study shows that the perceived needs of Nigerian users are not entirely identical with the perceived needs of the Board members of the IASC and that Nigerian users do not perceive the same set of information items as important as do users in some developed countries.

Chapter 8 presents a survey of the contents of annual reports and accounts issued between 1982 and 1986 by 47 companies selected from the 94 companies quoted on the Nigerian Stock Exchange. The measurement of the extent and scope of reporting was based on a scoring sheet which was used in grading each reporting company's annual report. The author found that Nigerian firms tended to follow British disclosure practices and that they did not provide much voluntary, especially socially relevant, information. In Chapters 9 and 10, the author moves beyond the analysis of independent items and tries to group them together in composite groups of information or financial statements within the annual report. The author notes that disclosure was relatively poor during the 1982–86 period, with the quality declining for a significant number of firms studied. Chapters 9 and 10 discuss the nature and quality of the overall disclosure of the firms of the sample.

The final chapter summarises the findings of the study and identifies six mechanisms for improving the accounting and financial reporting environment in Nigeria. The book is well-written and contains good information that will be useful to researchers and teachers of international accounting.

Brigham Young University   Lee H. Radebaugh

A Dictionary of Business Quotations. *Simon James and Robert Parker.* Routledge, 1990. 172 pp. £14.99.

This book is eclectic, witty and packed with late twentieth century English-language thought on business and related topics. Its contents are listed in 215 categories, some of which (like the substantial section on 'Education', with 44 entries) seem oddly located in a book of business quotations. However, the book is well indexed, by author and by key words as well as topic. Attempts to find a sample of well known sayings proved successful.

There are of course omissions—some of them surprising, such as Ogden Nash's warning to bankers, and the 'history is bunk' attributed to Henry Ford. There is nothing from Thomas Aquinas or from the Koran. Readers of this journal may find some relief that two descriptions often believed to refer to accountants were originally used about other groups. Elbert Hubbard refers to *buyers* as 'inhuman, without bowels, passions or a sense of humour'; and Oscar Wilde's comment about 'knowing the price of everything and the value of nothing' was about neither economists nor accountants but cynics (*Lady Windermere's Fan*). I wonder why we should feel guilty.

There is bound to be disagreement over some of the judgments exercised. Too many cheap jibes, maybe. Too little solid history of economic thought (although there is some good material here). It may be surprising to some to find that, as a source of good quotations, the Bible comes some way behind the *Sydney Morning Herald*; and that both languish behind the *Observer* and the *Gnomologia* of Thomas Fuller (1654–1734).

Whether the book is to be judged as a success or not depends on what its purpose is taken to be. As a means of tracing half-remembered expressions, it is a useful supplement to earlier dictionaries of quotations with a more general coverage. Some of the entries are not very impressive, and the collection is rather specific in terms of time, place and social attitudes. It might, for example, be a good source for Chinese managers arriving in Britain and wanting a half-day guide to Anglo-Saxon ideas on business.

To appreciate the contents sometimes one needs a certain amount of background knowledge. Thus the quotation: 'I do not remember that in my whole life I ever wilfully misrepresented anything to anybody at any time. I have never knowingly had connection with a fraudulent scheme' means nothing unless one knows something of J. P. Morgan. Whatever can have been the context of this attributed remark?

The silliest statement quoted in the book, in my view, has to be: 'There is no such thing as society: there are only individual men and women, and there are families.' My favourite comes from an anonymous writer: 'If God had meant us to travel in the rush hour, He would have made us much smaller!'

Lancaster University   Michael J. Mumford

Management Accounting: Evolution not Revolution. *M. Bromwich and A. Bhimani.* Chartered Institute of Management Accountants, 1989. x + 112 pp. £9.95

The Revolution in Management Accounting. *M. Bromwich,* The R. J. Chambers Research Lecture, The Accounting and Finance Foundation, The University of Sydney, 1989. x + 55 pp A$15

Both these publications seek to assess the relevance of many of the recent suggestions made by researchers for the introduction of major changes in management accounting practice to improve the relevance of management accounting systems (MAS). There is considerable overlap between the two publications; the only major difference is the discussion of strategic management accounting in greater detail in the second.

The research contained in both publications was sponsored by the Chartered Institute of Management Accountants (CIMA) and the researchers' brief was to identify 'the criticisms being made against present MAS, the way in which management accounting techniques already exist to meet them, the findings of research in this field and any gaps that might initiate further research' (p. vii, first publication).

As a background to the analysis, the changes brought about by the new manufacturing environment and the challenges they pose for management accounting are considered. Chapter 1 rehearses the familiar arguments that innovations in production technology, as evidenced by advanced manufacturing technology (AMT) and new modes of restructuring workflow culminating in the rise of the 'factory of the future', have exposed the weaknesses of conventional MAS. These include hindering investment in AMT because of over-emphasis on short-term quantitative and financial measures, inappropriate cost management because of failure to take account of the significant changes in the manufacturing cost mix (the decline in the importance of labour cost) caused by the introduction of AMT, and ineffective performance evaluation because of focus on short-term monetary measures which fail to capture the non-quantifiable and non-financial dimensions of performance arising from new forms of work flow and the increased conceptualisation of the organisation as a strategic unit.

This is followed by a description of new production technologies such as materials requirements planning, just-in-time-systems, numerical control machines, computer aided design/manufacturing and flexible manufacturing systems, in order to illustrate the kinds of challenge that face MAS.

The discussion then moves on to examine Japanese MAS and the extent to which they differ from those in the West. Among the characteristics specific to Japanese MAS are the stronger links forged between corporate strategy and MAS, using non-cumulative costing procedures, and the harnessing of overhead allocation systems not only to motivate local decisions towards corporate interests but also to encourage innovation. The discussion also points to further differences between Japanese and Western practices: (i) greater emphasis on non-financial measures (e.g. reject rates), (ii) target pricing based on the potential for marketability rather than on accumulated cost, and (iii) the unique Japanese culture and its implications for anti-individualistic orientations and the protective relationship between business and the state. This is followed by an examination of the US perspective indicating the presence of a 'crisis' in MAS. The discussion summarises the familiar arguments of Johnson and Kaplan and also considers some of the implications of AMT for MAS in relation to the manufacturing cost mix and accounting variances. Some new developments in management accounting techniques are considered, such as backflush accounting, activity-based costing, and qualitative and non-monetary measures. There follows a brief review of UK-based research into the impact of AMT and information technology (IT) on management accounting practice. The results of the review emphasise the importance of the organisational context of MAS and the increased reliance on qualitative information.

In considering the extent to which changes should be introduced into management accounting practice, the view taken in both publications is a cautious one, emphasising the desirability of evolutionary, rather than revolutionary, change at least for the time being. Only those changes whose benefits have become fairly well established should be taken on incrementally; the case for others is yet to be made convincingly since, in the authors' view, they are based on a handful of field studies which might be subject to strong selection bias:

It is, however, inappropriate at this stage to introduce reforms in management accounting in a precipitate way on the basis of insufficient information about the impact of AMT adoption in different industrial sectors. Worse still, would be to impetuously subject the management accounting field to changes relying on developed

theoretical resolutions not yet fully substantiated by empirical evidence (Bromwich and Bhimani, pp. 100–101).

Hence, piecemeal changes are to be preferred to sweeping changes and the former could involve development of the role of informal communication, non-financial and non-quantifiable information, and strategic management accounting, whilst gaining a better understanding of the organisational and social contexts of MAS.

The contributions of Bromwich and Bhimani to this emerging field of research are clearly to be welcomed. Both volumes are well written and contain many useful and important insights. I particularly welcome their emphasis on the importance of the organisational and social contexts of management accounting in order to gain a better insight into its technical dimension.

The sparsity of relevant references in the English language makes it difficult to conduct very thorough research in this area, and this has to be taken into account when assessing the contributions of Bromwich and Bhimani. With this in mind, I have three reservations about their work.

Firstly, their advocacy of a conservative/defensive role for management accounting practice can have implications that go far beyond the subject area of their research. To argue that reforms in MAS should await the assimilation of strong evidence indicating that the benefits of new innovations exceed their costs can place management accounting practice in a precarious position. Whilst there are strong arguments which militate against wholesale importation of new accounting innovations developed in differing, and possibly quite unique, social and cultural settings as the authors have successfully pointed out (see also Ezzamel et al, 1990), management accounting practice should adopt a proactive role, particularly given the revolution that is taking place in AMT. The challenges posed by AMT are real and need the urgent attention of practitioners and academics alike (see Ezzamel, 1989).

Secondly, despite some brief discussion of information technology (IT), neither publication explores properly many of the implications of IT for the design of MAS and, perhaps more importantly, the extent to which management accounting practitioners can use IT to harness the application of AMT. MAS should no longer be perceived simply as the mechanistic outcome of some antecedent conditions; much insight can be gained by exploring the potential for MAS to facilitate, or indeed hinder, developments in AMT.

Thirdly, although the authors point out that the analysis presented in both volumes relies on empirical research conducted by themselves and by other researchers, it is a great pity that very little evidence of the former appears in either

publication. Both publications give the apparent impression of simply summarising the empirical results obtained by previous researchers and hence it seems that Bromwich and Bhimani did not do themselves justice.

Despite these reservations, the authors have gone a long way towards achieving their objectives. I strongly recommend both publications for practitioners, students, and academics interested in the field.

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The Manchester School   Mahmoud Ezzamel
   of Management UMIST

Government's New Departmental Reports: Challenges & Potential Problems. *Andrew Likierman & Alison Taylor.* The Chartered Association of Certified Accountants, 1990. 84 pp. £9.95.

The Government is changing the way it presents financial information to Parliament. More particularly, it is changing the format in which it presents its three-year plans for expenditure. As part of what appears to be a seamless web of change over at least the past twenty years, one of the current changes is that the 'Public Expenditure White Paper' is being replaced in part by 'departmental reports'.

This is the first of three promised studies into this development, sponsored by the Chartered Association of Certified Accountants, covering the period 1990–92 and carried out at the London Business School. Dated July 1990, this first study is concerned with the Government's preparations for publishing the first set of 'departmental reports' early in 1991. Indeed, it is clear that the study's primary purpose was, and is, to influence the policies adopted by the Government and its departments in producing these new reports.

The views of preparers and perceived users of these departmental reports were gathered by meetings or telephone conversations, using a semi-structured questionnaire, and from written replies of 'users'. This yielded 120 responses. In addition about 150 responses were received from various other groups. These responses are not reported systematically and the ones that are reported are anonymous. We are also told that a survey of the literature in the UK and nine other countries was carried out.

Twenty-four recommendations are made in respect of the following issues: audience and purpose of the departmental reports; form and content; presentation; timing; marketing and distribution. The majority of these recommendations are directed towards the government departments. A few recommendations are addressed to Parliament, particularly departmental select committees, essentially as a way of encouraging 'users' to become involved in 'improving' reporting by government departments.

The recommendations are sometimes very specific and, one might imagine, easy to comply with; in other cases they are general enough to be satisfied in a variety of ways. It is to be expected that government departments as a whole found the study very useful as a cost-effective way of bringing together relevant issues, some of which might easily have been missed by any one department researching the problem alone. There is no doubt of its authoritativeness, not least given that a steering committee of knowledgeable people provided advice and guidance.

The study will probably be of limited interest to academics and students who are not intimately involved with the specific development being addressed. It is not driven by theory, and concentrates instead on the practical and laudable objective of helping to get a job done across government better than would have been done without it. Perhaps later studies in this research programme will provide the broader perspective.

University of Birmingham   Rowan Jones

Accounting in Business, *R. J. Bull.* Butterworths 6th. ed. 1990. xii + 505 pp. £14.95.

Any textbook that has reached a sixth edition must be doing something that appeals to a wide and continuing audience. The reasons for Bull's popularity are not hard to find. It is directed at students on BTEC, Foundation and first year degree courses as well as providing a basis for a number of the preliminary examinations for the professional accountancy bodies. The text covers bookkeeping, basic accounting and financial reporting as well as introductory costing, budgeting, investment appraisal, working capital management and simple decision techniques. The coverage is thorough—in a basic way—and through a well written text, sensibly organised material, a good index and a wealth of examples, test questions and (the bizarrely entitled) 'Questions for Discussion' ensures that the student has a sound grasp of the conventionally essential elementary procedures traditionally associated with accounting.

Accounting in Business has grown and developed significantly from the, to my mind, rather pedestrian text of the early editions. This latest edition (revised with assistance from Lindsey Lindley and David Harvey of Polytechnic South West) represents a mature text with the coverage, depth, style and organisation that deserves its wide adoption. In general, therefore, it must be one of the most attractive and easily accessible texts of a conventional nature in this overcrowded portion of the market.

One of the factors by which the author(s) seek(s) to distinguish the book from its more obvious competitors is the '[c]onsiderable emphasis [that] has been placed on the integration of the theory with the application, seeking to stimulate independent thought on the part of the reader' (p. v.). I was greatly heartened to read this in the preface. It has long puzzled me why so much of introductory accounting education seems content to rehearse (admittedly essential) skills and procedures without encouraging a real questioning and the development of the very able students' intellectual curiosity and ability. As educators, it is, surely, our duty to raise as many of the conundrums, arcane activities and sheer bewildering 'accepted practices' as possible and to do this as early as possible in the students' education. And there are plenty of these without venturing into social, environmental and other 'radical' perceptions of accounting. Sadly, I was disappointed. Compared to, for example, Frank Wood's classic texts, I suppose Bull does deliver some 'theory' but in the end it is very thin indeed. We still find 'historic data, once collected, ... recorded in a manner which is in accordance with general accounting theory' and accounting as a tidy, asocial, apolitical technology.

For the teacher who still wishes to submerge the fertile student mind in the traditional procedures of conventional accounting with negligible exploration of 'why?', 'why not?' and 'so what?' it is difficult to think of a better organised text with the same excellent coverage. In this context it can be warmly recommended. I just wish that someone could explain to me why we might still want to do this.

University of Dundee   R. H. Gray

Public Sector Accounting and Financial Control. *D. Henley, C. Holtham, A. Likierman and J. Perrin.* Van Nostrand Reinhold, 3rd ed., 1989. xv + 308 pp. £15.95. **Public Sector Accounting.** *R. Jones and M. Pendlebury.* Pitman, 2nd ed., 1988. x + 276 pp. £12.95.

Despite (because of?) the attempts of the current UK government, with its vigorous privatisation policy of the past decade, there remains a keen interest in public sector accounting. This might be explained by the fact that, even with this government's privatisation programme, the public sector remains a significant part of the economy. However, other influences are at work. On the one hand, professional accountants in the public sector have been keen to demonstrate that the common alleged criticism of public sector 'inefficiency' (obviously the use of this word begs several questions but these are addressed, at least in part, below) by proponents of privatisation cannot be made of them. In this way public sector accountants have redefined their role as essentially that of financial management, in which techniques of financial control are used which are at least as sophisticated as those employed in the private sector, and in which accountants are sensitive to the changes sweeping through the public sector—the importance of the consumer, new methods of financing and so on. An interesting example of this viewpoint is Noel Hepworth's foreword to Henley *et al.* However, it would be wrong to infer from this that the traditional role of public sector accountants' financial reporting and financial accountability has been neglected. Even the most casual observer of the financial reporting practices of public sector institutions would have noticed significant improvements, both as to format and content, in the past ten to fifteen years.

A further strand of interest which has emerged in recent years is that of contextual studies of accounting practices in the public sector. These studies are informed by sociological paradigms. The context (processes, environment) is seen to be of fundamental importance and accounting techniques and practices are seen to be of secondary (if any) importance. The reason for this interest is evident. During the past decade, the language of accountancy—cash flows, profitability, value for money—has assumed a central role in government policy towards the public sector. This raises issues of relating value for money to 'efficiency' and what 'efficiency', in turn, means, e.g. productive, allocative. This has aroused an interest in public sector accounting on the part of academic accountants (and others) with little or no interest in 'best practices' in accounting, but with particular interests in the tensions arising from the change from a producer-dominated public service model to one which emphasises the new consumerism.

At first sight both Henley *et al.* and Jones and Pendlebury would appear to eschew the latter (contextual) set of influences in favour of the former (i.e. professional practices). However, both books recognise the importance of environmental variables in the world of the public sector accountant. Jones and Pendlebury have an introductory chapter which sets out the complexity of the public sector operating environment. Henley *et al.* also

address this issue, but in a more detailed, painstaking fashion. The focus of Henley et al. is (and has been through its three editions) on the different operational branches (local and central government, NHS, nationalised industries) of the public sector. This lends itself to setting out, in considerable detail, the specific circumstances of these different parts of the public sector. While this material may not be immediately accessible to, nor is it presented in the typical form of, the sociologically informed academic, it is, nevertheless, a useful entrée into public sector accounting for such readers.

Nevertheless, the major thrust of both of these books is that of addressing 'best accounting practices'. Despite the common focus, markedly different approaches have been used. Whereas Jones and Pendlebury structure their book around financial and management accounting, Henley et al. group their material around areas of the public sector. In terms of underlying rationale, Jones and Pendlebury present a recommended set of best practices. Thus they include useful material on, for example, zero-based budgeting (chapter 5). This concept has been in the literature for some time, but it has not been applied widely in practice and certainly not in the public sector. In this way, Jones and Pendlebury do not just advocate the state of the art, but specific techniques which should improve the overall quality of financial management.

On the other hand, Henley et al. start from a different premise. In their view, the public sector is about *diversity* writ large. This perspective they seek (successfully) to demonstrate in their chapters on the various parts of the public sector. The benefit of the Henley et al. approach is that there is a fusion of internal and external accounting practices. This is rather better at capturing the integrated nature of management and financial accounting in public sector organisations. However, it appears to preclude the possibility of uniformity of accounting practices throughout the public sector, a topic of considerable importance in its own right. Despite the overlay of the detailed institutional background (for example, specific statutes, government circulars, professional recommendations), the detailed chapters in Henley et al. remain accessible. There is no evident, exact checklist of items to be covered in each of these different parts of the public sector in these chapters, but the consistently high standard of lucid writing is a testimony not only to the individual authors but to careful editing. Neither of these books is informed by the contextual studies of public sector accounting which are mentioned above. Nevertheless, these two books have contrasting styles which reveal that they are addressing different audiences. This is most evident in the nature of the forms of assessment included. Whereas the Henley et al. study questions are all

of an essay type, the Jones and Pendlebury text includes numerical questions which are suited to both undergraduate and professional examinations. Both of these texts have excellent recommendations for further reading. However, the nature of the Henley et al. text makes it more useful as a source book which students can use as a reference for further independent study. On the other hand, the structure imposed on the topic of public sector accounting by Jones and Pendlebury will no doubt appeal to busy students with competing demands upon their time. Both of the texts are well written. Indeed, this reviewer has had occasion to use both of these texts for an undergraduate class in public sector accounting and *both* were well received by students.

Both books are well established. Henley et al. is now in its third edition, Jones and Pendlebury in its second. Subsequent editions have made some cosmetic changes and general tidying up (for example, the placing of all references and study questions at the end of the Henley et al. book, the introduction of chapters on financial reporting and management accounting). However, the necessity of revised editions is prompted by more significant factors—most importantly the nature of government policy with legislative changes and changes in government directives. Similarly, changes in recommended practices by professional bodies necessitate revision. To the outsider who does not specialise in this area, it may appear that this area is comparable to taxation. However, the changes in public sector accounting are, in this reviewer's mind, more erratic and unpredictable than the annual round of changes to the Finance Acts. This is demonstrated by these two books. The more recent of these, Henley et al., captures recent proposed changes for local authorities in capital accounting and in the use of service level agreements. On the other hand, while Jones and Pendlebury make no reference to the community tax charge, Henley et al. do. However, given current pressures to scrap the community tax charge, it is ironic that the Jones and Pendlebury treatment of local authority finance could be the more up to date. To demonstrate further the elusive nature of writing public sector texts, it is worth noting that detailed changes in NHS accounting (notably the introduction of capital charging and a resource allocation system based on bidding) present items to be included in forthcoming editions of these books. The authors of both of these books on public sector accounting are to be commended for even attempting to write them, in the face of the shifting sands of government policy, and to be congratulated on the excellent additions which they make to the libraries of teachers of public sector accounting.

University of Edinburgh   Irvine Lapsley

The Choice of Accounting Method in UK Mergers and Acquisitions. *C. Higson.* Institute of Chartered Accountants in England and Wales, 1990. 57 pp. £10.00.

This pamphlet investigates the choice of accounting method adopted by 373 listed companies that were involved in business combinations between 1976 and 1987. Since the value of acquisitions over that period rose dramatically and the accounting issues lay largely unresolved, this publication is timely. The research was sponsored and published by the Research Board of the ICAEW.

The pamphlet begins with a summary of the findings of the research. This is followed by two chapters which help set the scene, one chapter which summarises the descriptive findings and two others which cover the empirical results and the conclusion. The tables (10 in total) are located, not with the text, but at the end of the publication along with a list of references.

The introduction to the monograph points out that concern has been expressed about the relevant accounting rules which some believe are too permissive, a view I have held for many years. In addition, there has been concern that the rules have been instrumental in leading some companies into difficulty, e.g. Saatchi and Saatchi. For example, the *Financial Times* (2 August 1990) expressed great concern about 'accounting problems' including merger accounting which it described as perhaps the worst abuse. The paper quotes Mr John Richards, a stores sector analyst at County NatWest: 'There has been more and more evidence of the most incredible stupidity. The accounting rules have persistently been bent by stores companies wanting to flatter this year's profits at the expense of future profits. Unfortunately, the future has turned out to be far more bleak than anybody ever imagined.'

What is crucial in these matters is the adequacy of the disclosure of information so that sophisticated users are able to make appropriate adjustments to enhance comparability. This research study found that there was insufficient disclosure in more than half of the sample. Where companies used merger relief the market value of equity used was often not disclosed and, where the information was given, multiple acquisitions in the year meant that it was impossible to establish the details of each transaction since disclosure was in aggregate terms. Lack of information on such crucial issues inhibits the ability of the market to be efficient.

Chapter 2 provides a brief resumé of the regulatory framework and discusses some implications for corporate policy. This is a chapter on the accounting, rather than legal, framework. Whilst the chapter highlights the current position there is no mention of ED3, which was published by the ASSC in January 1971. ED3 was far more sensible than SSAP23! The exposure draft was written with

some measure of principle in that merger accounting was to be used where there was continuity both of ownership and of the existing businesses within the combined undertaking. One of the requirements of ED3 was that the equity voting rights of the constituent companies should not exceed three times the voting rights by other constituent companies. This size criterion was introduced to ensure that a merger could occur only between reasonably equal partners. Regrettably such a criterion was not introduced into SSAP23, a standard, if that is what it can be called, which was written in the aftermath of the SSAP16 debacle (ED48, however, proposes major changes to SSAP 23). This chapter also mentions practice in the US, Canada and France although it is so cursory that it does not add a great deal. This is unfortunate since a more thorough analysis of overseas practice would have been a valuable addition to the monograph. The discussion of the implications for corporate policy is divided into first the effect of the accounting choice on reported performance and financial structure and secondly the effect of the accounting choice on distribution policy.

Chapter 3 starts with a discussion of the research sample. The sample was restricted in a number of ways, mainly by the requirement that both the acquiror and the acquiree had to be recorded on Exstat and the London Share Price Data tape. However, the statement that the sample was restricted to UK quoted companies is a little at odds with the sentence that 'some combinations involving relatively small companies, including USM stocks, are included' (p. 29). Sample selection is further confused by the statement that 'financial combinations are *largely* [my italics] excluded' (p. 29). On this 'basis', a sample of 373 companies was selected out of approximately 2,700. An analysis of the accounting methods used revealed that 34 transactions were accounted for using merger accounting, 107 used acquisition accounting with merger relief and 232 used acquisition accounting. Thus, fewer than 10 per cent of transactions over the period 1976 to 1987 were accounted for using merger accounting. However, over the period 1985 to 1987 this proportion rose to 14.7 per cent (described as a significant minority). Of those transactions that could have been accounted for using merger accounting, in accordance with SSAP23, only 29 per cent actually used this method. The research found that merger accounting tended to be used when the acquiree was relatively large compared to the acquiror and when the acquiree was historically more profitable than the acquiror. Thus, there is support for the notion that '... merger accounting is used to enhance the current and historic performance of the bidder' (p. 9). In addition, it was found that some companies used merger accounting for one transaction and then used acquisition accounting for others.

Higson also found that equity finance was more common as a method of payment in acquisitions with a substantial goodwill element. He concluded that accounting considerations affect the choice of payment in business combinations. What must be borne in mind, however, is that over the period 1973 to 1984 cash was the major form of acquisition currency whereas during the bull market between 1985 and 1987 equity finance became the major form of consideration. The stock market crash quickly had an effect and acquisition currency became dominated by cash again.

My major reservation is that in many instances I wanted more information than was available in the text. For example, I would have liked more detail on exactly how the research was undertaken. In addition, the literature review could have been more thorough, the historical background given due consideration and the international element considered in much greater depth. Despite these reservations the publication makes interesting reading and contributes to the literature on mergers and acquisitions.

University of Exeter   T. E. Cooke

Accounting Research Database. *Bimal Prodhan and Fouad Al Najjar.* Routledge, 1989. 247 pp. £35.

This 'Database' of accounting research is restricted to four journals: Accounting and Business Research (ABR), The Accounting Review (AR), Journal of Accounting Research (JAR), and Journal of Business Finance and Accounting (JBFA). The bulk of the book (143 pages) simply lists the titles and authors of all major articles published by those journals in chronological order, 1976-85. The articles are then listed again, categorised into 20 subject areas, and as 'conceptual' or 'empirical' (66 pages).

The thirty pages of analysis and comment include some interesting information about the contents of the four journals 1976-85. Accounting and Business Research included the biggest proportion of 'conceptual' articles (70.7%); the Journal of Accounting Research included the biggest proportion of 'empirical' articles (also 70.7%). The proportion of 'empirical' articles increased steadily during the period by from 33.3% in 1976 to 68.8% in 1985. The proportion remained consistently high in the Journal of Accounting Research, but increased steadily in each of the other three.

The most popular topics (and the number of articles on each) were Audit (162), Information Systems (114), Security Prices (114), Price Level (104), Disclosure (99), and Corporate Finance (98). There was considerable variation in topic preference between the different journals. Audit was number one with both American journals, but well down in popularity with the two British ones. History was number one for ABR, corporate finance for JBFA.

The book touches on the difficulties of classifying articles according to topic, but appears to assume that the categorisation 'empirical' or 'conceptual' is unproblematic. It seems to the reviewer that many 'descriptive, literature review, prescriptive and normative articles' are supported by data and hypothesis testing to varying degrees. Similarly, many 'data management and hypothesis testing' articles are peppered with prescriptive and normative assertions, and assumptions which are often not articulated.

The autors have reservations about the increasing shift towards empiricism, following Zeff's (1983) view that 'the pendulum may have swung too much ... towards empiricism, interdisciplinary borrowings and rigours of research at the expense of the classical, mainstream, conceptual and the "big" questions'. But they state that the balance between empiricism and conceptualism must remain a matter of value judgment; their research has merely gathered some 'facts'.

The title of the book is mischievously misleading. As a 'database' it has severe limitations. The articles listed are from only four journals; the main listing is in chronological order; the subsequent listing by topic area makes access to articles possible but clumsy. Topic areas (such as 'audit' or 'disclosure') are very general. The listing of topics does not give page numbers. It is therefore necessary first to search for topics sequentially, then to search to find the author and date of the article, but in that section no title is shown, and there is no page reference to show where the article is in the 'database'; the title can be found by chronologically searching the main listing, but there is no abstract. There is no 'normal' or user friendly index by author or topic. It cannot even be used for checking bibliographical references as it gives the first page number for each article, but not the last. A 'random' check (one of my own articles!) showed an error in the title, and that it was omitted from the topic classification.

Like much empirical research this book makes extensive statistical use of a limited database, and draws interesting conclusions, but offers relatively little discussion of them (less than 10 pages). The discussion might have been better presented as an article (excluding 209 pages of listings). The bulk of the material should have been made more easily accessible if it is to be an effective database.

Reference

Zeff, S. A., 'A Retrospective', *Accounting Review*, January 1983, pp. 129–134.

University of Aberdeen   Bob Perks

CONTEMPORARY ACCOUNTING RESEARCH/RECHERCHE COMPTABLE CONTEMPORAINE

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Watts, R. L. and Zimmerman, J. L. (1986), *Positive Accounting Theory* (Englewood Cliffs, NJ.: Prentice-Hall).

Style and spelling

Abbreviations should be written as, for example, FASB and not F.A.S.B. Words such as 'realise' should be spelt with an 's' not a 'z'. Single quotations marks should be used, not double.

Mathematical notation

Mathematical notation should be used only where its rigour and precision are indispensable, and authors should explain in narrative form the principal operations performed. Such notation should be avoided in footnotes. Equations should be numbered in parentheses, flush with the right-hand margin.

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Objective of Accounting and Business Research

The objective of Accounting and Business Research is the publication of substantial and original contributions to knowledge in the areas of accounting and finance, broadly defined. Articles should be empirical or analytical; rigorous, yet preferably intelligible to a wide audience of academics and, where appropriate, practitioners. Presentation should be as elegant and economical as possible, avoiding unnecessary words, numbers or symbols.

Secret Reserves or Special Credits? A Reappraisal of the Reserve and Provision Accounting Policies of the Royal Mail Steam Packet Company, 1915–27

A. J. Arnold*

Abstract—The Royal Mail case (*Rex v Kylsant and another*) in 1931 is generally seen as central to the appraisal of secret reserve accounting by companies in the first part of this century. Although the case shows that Royal Mail's accounts disguised the decline in their trading profits, it does not convincingly establish secret reserves as the major cause of this deception. In this paper, information contained in the company's internal records provides the basis for an alternative view, that secret reserves were established during the war years, through accelerated depreciation charges, but were not used to enhance profits after trading conditions became more difficult. Instead it is argued that the reported profits for 1922–27 were largely dependent upon a range of (undisclosed) non-trading incomes of the period.

Rex v Kylsant and another (1931), the Royal Mail case, is one of the most famous legal cases that relate to accounting. It has been described as 'central to modern studies of accounting between the wars' (Green and Moss, 1982, p. 2), and the 'event which, more than anything else, caused a reappraisal of the assumption upon which published accounting reports were constructed' (Edwards, 1976, p. 289).[1]

The Royal Mail case was also important because it provided evidence on the extent to which reported profits in general might be affected by secret reserve accounting. A number of recent studies[2] have added to our knowledge of this accounting practice but the volume of evidence is quite small

and Royal Mail has generally been cited as the leading example.

There can be little doubt, from the evidence produced at the trial, that the company's accounting practices distorted the trend of their trading results, and that the non-disclosure of the constituent parts of the reported profits disguised the lack of current operating profitability, but it did not convincingly establish secret reserve accounting as the mechanism of deception. Thus Ashton (1986, p. 3) has recently argued that the (unsuccessful) charges relating to 1926 and 1927 were more concerned with the treatment of tax repayments than the use of secret reserves.

The purpose of this paper is not to reconsider the wider significance of Royal Mail or its group[3] but to attempt a resolution of the uncertainties raised by the trial by analysing the reserve and provision accounting practices of the Royal Mail Steam Packet Company (RM) through the period from 1915, when RM first set aside profits to an undisclosed reserve, until 1927, when RM's undisclosed reserves were nearly exhausted, using information contained in the company's archives.

From this basis it will be argued that the trial proceedings have both exaggerated and distorted the contribution of secret reserve accounting to the smoothing of RM's profits over the period 1915–27. This, it is hoped, will add to our understanding of accounting practices during the early part of the twentieth century.

*The author is senior lecturer in the Department of Accounting and Financial Management, University of Essex. He would like to thank University College, London, for permission to use their archives on Royal Mail, and staff in the D.M.S. Watson Library at UCL for their assistance; Price Waterhouse and their archivist, Mr John Barrett, for access to papers relating to Lord Kylsant and Royal Mail; the Librarian of City Polytechnic, London for access to the Polytechnic's shipping collection; Dr. Robert Greenhill for his help and advice; and two anonymous referees for their comments on an earlier draft of this paper.

[1]Bircher (1988, p. 10), for example, saw RM as 'one of a complex set of influences on the regulatory changes contained in the 1948 Act'; Walker (1978, p. 94) described RM as 'a major factor in encouraging the publication of consolidated statements' and de Paula (1948, p. 265) viewed it as providing the 'first great impulse' towards improvements in the presentation of accounts and the 'establishment of an agreed code of basic accounting principles'.

[2]See Edwards (1981 and 1989, pp. 138–41), Edwards and Webb (1982), Chandler (1983) and Napier (1990).

[3]See Greenhill (1971), Davies and Bourn (1972) and Green and Moss (1982).

Accounting practice concerning reserves and provisions

During the period 1915–27 the Companies Acts did not require companies to publish profit and loss accounts,[4] or specify the level of disclosure required in balance sheets. In a substantially unregulated environment it was only a short step to setting aside undisclosed or inner reserves by understating net assets. The case of Newton v. Birmingham Small Arms Co in 1906 appeared to sanction the use of secret reserves, although this was in the context of the shareholders having themselves changed the company's articles to allow the creation of a reserve disclosed to auditors but not to shareholders.

Before the Second World War there was also no clear guidance from company law or the accountancy bodies on the necessity for, and the disclosure of, depreciation charges, and this meant that secret or inner reserves could be created by two distinct means. The orthodox way of creating a secret reserve involved the exaggeration of liabilities by means of an undisclosed transfer of profits (see Edwards, 1989, p. 137) but undervaluations of assets, for example by excessive depreciation provisions, were equally effective and are thought by Marriner (1980, p. 219) to have been widely used.

Terminology in this area was far from standardised. A standard text on auditing, published in 1914, identified five types of reserves, including secret reserves and also specific reserves, which represented 'a sum charged against profits to provide for a known contingency the amount of which, however, cannot be ascertained and has therefore to be estimated' (Edwards, 1981, p. 19). The term 'provision' was little used and the more modern distinction between provisions, as estimated charges against profits, and reserves, as allocations of profits, was not widely observed by practising accountants even in the 1920s and 1930s[5], or formally recognised by the Institute of Chartered Accountants in England and Wales until 1943.[6]

The Royal Mail case: 'secret reserves' and 'special credits'

Kylsant: 'I think you are inaccurate in describing what are called special credits as

transfers... they were not transfers from reserve'. (Brooks, 1933, pp. 158–9)

Royal Mail's affairs were governed by its charter which required that an account be prepared of the 'debts and assets together with an account of the profits made in the year ending the 31st December preceding such general meeting' (Brooks, 1933, p. 7). The precise content of the 'account of profits' was not, however, defined and RM's chairman, Kylsant,[7] ostensibly because of foreign competition, steadily reduced the information provided to shareholders. In 1906 the detailed general trading (or working) account was replaced by a profit and loss account, and in 1909 the depreciation charge was only indicated in general terms and thereafter omitted. In 1913 one financial journal regretted the adoption of 'the vicious principle of concealment' (*The Statist*, 3 May 1913, p. 374) and another complained about unhelpful accounting practices (*Fairplay*, 1914, pp. 897–8).

The trial was concerned with more specific aspects of RM's accounting practices than the general level of disclosure; the prosecution successfully alleged[8] that the debenture prospectus for 1928 gave the impression of a company in which money could be safely invested, whereas in reality 'in the seven years 1921–27 the company had used no less than £5,700,000 of non-recurring sources of income which owed their origin and parentage to the war years' in order to pay debenture interest and dividends (*Times Law Reports*, 1931, p. 64).

On closer examination, however, it is clear that the £5,700,000[9] included a variety of items, some of which had a potential temporal effect, and others which, even if non-recurring, related to the year in question and not to some earlier period. Furthermore the £5,700,000 relates to the period 1921-27, whereas RM first began to set amounts to undis-

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[4]The presentation to shareholders of an annual (unaudited) profit and loss account by companies registered under the Companies Acts was not required until 1929.

[5]See Edwards and Baber (1979, p. 144), Dicksee (1934, p. 53) and Edwards (1981, pp. 19–28, 38–41).

[6]With the publication of Recommendation on Accounting Principles No. 6, 'Reserve and Provisions'.

[7]Owen Phillips became Lord Kylsant in 1923; for simplicity he is described as Kylsant for the entire period 1915–27.

[8]Kylsant was charged in an indictment containing three counts, that he published: (1) the annual report for RMSP for 1926; (2) the annual report for RMSP for 1927; (3) a prospectus for debenture stock in RMSP in 1928, which he knew in each case to be false in a material particular with intent to deceive, (1) and (2), or with intent to induce people to entrust property to the company (3). The auditor, Morland, was charged with aiding and abetting Kylsant regarding counts (1) and (2). As is well known Kylsant, and therefore Morland, was found not guilty on the first two charges, but Kylsant was found guilty on the third charge and sentenced to twelve months imprisonment. Although charges (1) and (2) referred only to 1926 and 1927, charge (3) covered the period from 1918 to 1927 and the evidence put forward in the trial related to the period 1911–29, often focussing on the period 1921–27.

[9]This figure is the net balance of non-recurring items, described in the trial as 'special credits' and 'special debits'; see Exhibit 21 (Brooks, 1933, inside rear cover).

closed reserves in 1915. In order to evaluate Royal Mail's approach to secret reserve accounting it is therefore preferable to consider the period 1915–27, and to examine the treatment of both reserves (as designated in the internal records of the company) and provisions, which mainly related to shipping assets.

Royal Mail's undisclosed 'reserves'

There were eight accounts described in RM's internal records as 'reserves' which were not identified as such on the published balance sheets.[10] The history of each, over the period 1915–27, based upon information contained in RM's internal accounts and the official court depositions,[11] is set out in Table 1. This shows the transfers to and from RM's unpublished trading account, cash payments, other adjustments and the resulting annual balance.

The first three 'reserves' involved only small transfers of profit; the sums set aside from the trading account for government charter and exchange losses were followed by later cash disbursements and appear to have been simple provisions. The third reserve, for war contingencies, was also set up as a specific reserve, a provision to meet possible claims for loss of salary by company officers who were required to serve in the forces. The liability did not materialise and the delayed release to trading profit in 1922 appears to indicate a (small) secret reserve during the years 1919–21.

The three taxation 'reserves', for Excess Profits Duty (EPD), Income Tax (IT), and Corporation Profits Tax (CPT) were much more significant and involved the transfer of substantial amounts to and from Royal Mail's unpublished trading account over the entire period 1915–27.

In 1915 the government introduced EPD as much to meet public concern at war-time profiteering as to raise revenue.[12] This political sensitivity meant that the rules and rates in force were liable to sudden change,[13] and this made EPD unusually difficult to estimate.

The shipping industry was central to the war effort but also provided a focus for public indignation over profiteering; shipowners whose vessels were not under requisition orders were able to earn 'immense and possibly unique' profits (Salter,

1921, p. 113). Capital gains were exempt from EPD and this meant that the proceeds from sales of ships, which were trading at high prices, were untaxed. The government's desire to be seen to be equitable led to detailed provisions in the 1917 Finance Act which raised the effective rate of duty on the shipping industry, but left the government a general power to delay or waive payment where the funds generated by trading were to be used for capital projects (Green and Moss, 1982, p. 37).

This already complex situation was modified, after lobbying by the shipping industry,[14] by the Revenue Obsolescence Agreement of 1922, which made substantial refunds of the EPD already paid over by firms in the shipping industry. This 'unexpected and extraordinarily valuable present' (Sturmey, 1962, p. 52) of about £80 million was intended to compensate, retrospectively, shipowners who, like RM, had bought tonnage during the latter part of the war when this was beneficial to the war effort but uneconomic at the high prices then ruling.

These circumstances made the estimation of tax liabilities very difficult; Edwards (1981, pp. 40–1) noted that many companies, from the standpoint of the 1920s, seemed to have made 'over-generous provisions for Excess Profits Duty', while other firms in the iron and steel industry (1981, p. 14) found the estimation of liability arising under this levy so problematic that they were forced to 'delay preparation of their accounts for some years'.

The income tax and corporation profits tax position was also complex. The lucrative war years created a potential tax liability but, during the more difficult years that followed, companies like RM that were making losses could recover income tax previously paid over to the Inland Revenue and could also retain income tax deducted when paying dividends to their shareholders. The tax accounts were further complicated by the fact that repayments of excess profits duty were taxable income for income tax purposes, and by the tendency of the Inland Revenue to make repayments covering a combination of EPD and IT for both RM and its subsidiary companies.

In each year in the period 1915–21 there were undisclosed charges for taxation against trading profits; in each year in the period 1922–27 there were undisclosed additions to trading profits relating to taxation. The build-up of the tax accounts from 1915 to 1921 are detailed in Table 1 and can be summarised as follows:

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[10]There was also a published 'reserve fund', built up and reduced by explicit transfers from and to the profit and loss account.

[11]CRIM 1/562, Public Records Office, Chancery Lane.

[12]See Pollard (1962, p. 64).

[13]The rate was set initially at 50%, raised in 1917 to 80%, reduced in 1918 to 40%, and raised again in 1920 to 60%. (A state of war existed legally until well into 1921, due to the failure to conclude peace talks with Turkey.)

[14]Kylsant was one of the representatives of the shipping industry who negotiated obsolescence allowances with the government.

Table 1
Royal Mail's Unpublished Reserves 1915–27 (£000)

	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Government Charters:													
Transfers Cash		55	29	16	11	(31)	(16)	(60)	(4)				
Balance		55	84	100	111	80	64	4	0				
Exchange:													
Transfers Cash					100	(42)	(3)	(21)	(19)	(15)			
Balance					100	58	55	34	15	0			
War Contingencies:													
Transfers	45							(45)					
Balance	45	45	45	45	45	45	45	0					
Excess Profits Duty:													
Transfers	70	800	400	100	342	424	125	(100)	(100)	(330)	(300)	(550)	(233)
Cash			(592)	(479)	(100)	27			S(250)	S(161)		S(60)	S(9)
Other Adjustments							I(300)		500	T(236) 550		330	M132
Balance	70	870	678	299	541	992	817	717	867	690	390	110	0
Income Tax:													
Transfers	44	162	100	60	237	100			(450)	(350)	(250)	(175)	(120)
Cash			117	(9)	(48)	(50)	49	(232)	D182	D171	D159	D121	D150
Other Adjustments									C(15) (8)	E236 75	(4)	242	S(331) 157
Balance	44	206	423	474	663	713	762	530	239	371	276	464	320

Table 1—Continued

	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Corporation Profits Tax:													
Transfers						34				(40)			(33)
Cash													
Other Adjustments										M6			M33
Balance						34	34	34	34	0	0	0	0
Premises:													
Transfers						30							
Cash													(20)
Balance						30	30	30	30	30	30	30	10
Deferred Repairs:													
Transfers	120	40	66	144	165	280			(250)	(150)			
Cash							(391)					(24)	
Balance	120	160	226	370	535	815	424	424	174	24	24	0	

Key: 'Transfers' are (to) and from the unpublished trading account; 'Cash' is (paid) or received; (S) relates to a subsidiary company; (I) is a transfer to (reduce) Investments; (T) is a transfer to Income Tax; (E) is a transfer to Excess Profits Duty; (C) is is a transfer to Corporation Profits Tax; (D) is income tax retained on distributions; (M) is miscellaneous transfers (either minor or unknown).

EPD:	Amounts set aside, 1915–21	£2,261,000
	less payments on account, 1917–20	(1,144,000)
	less surplus set against investments in 1921	(300,000)
	Balance at December 1921	817,000
IT and CPT:	Amounts set aside, 1915–20	£737,000
	net repayments and deductions 1917–21	59,000
	Balance at December 1921	796,000

The prosecution claimed (see Exhibit 21 in Brooks, 1933), that £2,900,000 relating to taxation and originating in the war years was used by the company in the years 1921–27. The description 'originating' is rather ambivalent; it is clear from the company's records that 'temporal distortion' through the transfer of taxation reserves from the earlier period to later years can at most have been the sum of the two balances at December 1921, i.e. £1,613,000. The EPD balance at this date was, however, only £192,000 in excess of the remaining liability for 1915–21 as finally agreed in 1927;[15] the remainder of the amounts released to trading profits in 1922–27 consisted of obsolescence allowances of £1,191,000 and repair allowances of £230,000, in both cases as defined by the Revenue Obsolescence Agreement of 1922. These allowances may have had their origins in the war years but they could not have been estimated before 1922.

The IT and CPT balances, reduced by a payment in 1922 to £564,000, were released to trading profits between 1923 and 1927, but the further releases of £854,000 came from loss relief and the retention of income tax levied on dividend payments, consequent upon the company's failure to make taxable profits during the period 1922–27.

It is harder to assess the appropriateness of the timing of releases to trading profits within the period 1922–27; one of the trial witnesses, Sir William McLintock, thought that a large part of the IT and EPD reserves was free about the end of 1923 (Brooks, 1933, p. 44), and Ashton (1986, p. 15) argued similarly that 'full account should have been taken of the over-provision when the legislation enacting the relief became law'. The accountants who looked after tax matters for RM testified, however, that 'it was absolutely impossible' in 1923 to treat the EPD liability as determined (Brooks, 1933, p. 101), the Inland Revenue in correspondence described the EPD liability as 'far from settled' as late as 1925, and a final settlement was only reached in 1927 (Brooks, 1933, p. 53).

The last two undisclosed 'reserves' concerned the treatment of assets rather than liabilities. The first, the premises reserve, was established by a transfer of £30,000 from trading profits in 1920 to provide for later capital acquisitions, and represented a

(small) secret reserve. The second concerned repairs to shipping.

During the war non-essential repairs were necessarily deferred. RM built up a reserve of £815,000 by December 1920 by setting aside regular annual amounts, but these more than covered the additional spending in 1921 on repairs, and led to transfers back to trading profit in 1923 and 1924 of £250,000 and £150,000 respectively. The estimations in 1915–19 must have been particularly difficult but the charge in 1920 does not appear to have been necessary and the remainder of the balance on the reserve at the end of 1921 could then have been released to retained profits.

Royal Mail's undisclosed 'provisions'

Kylsant: 'it [a 5% depreciation rate] gives the advantage of an internal reserve without talking about it.' (Brooks, 1933, p. 147)

During the period 1915–27 the major, and undisclosed, provision was for fleet depreciation, but the company also maintained an insurance fund and a number of other accounts to deal with various aspects of asset maintenance and disposal. The amount of the insurance fund was shown on each balance sheet during the period 1915–27 but the annual provisions which funded it were not disclosed. During the war years, 1915–19, RM also paid premiums to external insurers but for more normal risks Royal Mail was large enough to derive economies from acting as its own insurer.

The annual transfers from trading profit and insurance fund balances, together with the net book values of the fleet, were shown by the internal records and are set out in Table 2. Royal Mail's experience before the war had been that a provision of 3% of the cost of shipping assets was more than adequate to cover the commercial risks involved, and at various times in the past the company had been able to pay dividends out of accumulated surpluses on the insurance fund. In 1922 RM changed its policy, however, and reduced the 3% charge by annual amounts of between £100–£150,000, immediately following two years of uniquely high transfers from trading profit. The impression that this gives of deliberate income smoothing behaviour may, however, be somewhat deceptive. The two years 1920 and 1921 were also

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[15]Amount agreed for 1915–21: £1,769,000 less payments on account £1,444,000 = £625,000.

Table 2
Royal Mail's Insurance Fund 1915–27

	Transfers to Insurance Fund (£000)	Disbursements from Insurance Fund (£000)	Balance on Insurance Fund (£000)	Net Book Value of Fleet (£000)	Balance on Insurance Fund: Net Book Value of Fleet (%)
1915	81	23	408	5543	7.4
1916	77	41	444	4802	9.3
1917	108	47	505	3652	14.4
1918	96	50	551	2194	25.1
1919	232	151	632	4482	14.1
1920	441	223	850	5916	14.4
1921	427	255	1022	6657	15.4
1922	196	121	1097	8112	13.5
1923	192	111	1178	8049	14.6
1924	139	101	1216	7386	16.5
1925	167	126	1257	6740	18.6
1926	162	118	1301	5638	23.1
1927	211	200	1312	4200(est)	31.2

Source: Draft accounts, Royal Mail archives, University College London.

years of uniquely high disbursements out of the fund and, following the collapse in shipping prices, disbursements also fell sharply. The reduction in the transfer from trading profits might not have taken place had profits not fallen but it did not prevent the balance on the insurance fund from increasing in every year, and only once after 1919, in 1922, did the fund represent a smaller pro-

Table 3
Depreciation Charges of Royal Mail and a Sample of Cargo Boat Companies, 1911–27

	Royal Mail Steam Packet			Fairplay's Sample of Cargo Boat Companies		
	Depreciation (£000)	Depreciation per Fleet Ton (£)	Depreciation to Book Value of Fleet (%)	Depreciation (£000)	Depreciation per Fleet Ton (£)	Depreciation to Book Value of Fleet (%)
1911	273	1.14	8.9	506	0.27	3.2
1912	317	1.26	8.8	1464	0.74	8.9
1913	313	0.91	7.2	3344	1.58	20.0
1914	363	1.11	6.4	1944	0.94	12.5
1915	438	1.41	7.9	2221	0.95	12.6
1916	591	1.91	12.3	3345	1.71	20.9
1917	377	1.16	10.3	2493	1.43	9.7
1918	293	1.10	13.4	711	0.48	3.1
1919	441	1.33	9.8	853	0.79	3.5
1920	411	1.20	6.9	1968	1.67	5.6
1921	572	1.64	8.6	1800	1.54	5.0
1922	496	1.31	6.1	1005	0.71	2.3
1923	621	1.70	7.7	866	0.52	1.9
1924	648	1.58	8.8	1060	0.56	2.3
1925	636	1.48	9.4	1065	0.50	2.2
1926	621	1.62	11.0	1085	0.54	2.4
1927	493	1.32	11.7 (est)	1537	0.72	3.6

Sources: Draft accounts, Royal Mail archives, University College London; Fairplay, Vol CII (1927, p. 126), Vol CXIV (1930).

Table 4
Fleet Book Values for Royal Mail and Liner Companies,
1915–27

	Royal Mail Steam Packet Fleet book values per ton £	Fairplay Sample of Liner Companies Fleet book values per ton £	Royal Mail: Liner Companies times
1915	17.8	11.4	1.56
1916	15.5	12.8	1.21
1917	11.2	16.7	0.67
1918	8.2	18.6	0.44
1919	13.5	24.6	0.55
1920	17.3	26.1	0.66
1921	19.1	25.5	0.75
1922	21.4	25.7	0.83
1923	22.0	25.4	0.87
1924	18.0	25.3	0.71
1925	15.7	27.3	0.58
1926	14.7	25.5	0.58
1927	11.2 (est)	25.0	0.45

Sources: Draft accounts, Royal Mail archives, University
College London; Fairplay, Volumes LXV-CVI.

portion of the net book value of the fleet than it had in the previous year.

There were also special credits to trading profits, relating to asset disposals, which were not shown in the published accounts. The earliest, a profit of £100,000 from the sale of ships in 1915, and a surplus of £250,000 from the liquidation of two subsidiary companies in 1920, were both set directly against assets, rather than included in profit and loss. Similarly, during the war years the surplus of payments made by insurance companies over the book value of ships lost had been credited directly to the fleet asset account, but in 1922 the accumulated total of £445,000 was credited instead to profit and loss. Finally there were profits on the sales of steamers which were credited to trading profits but which did not appear to involve any movement of gains from an earlier period to a later one.

The gains or losses on shipping also relate to the much larger issue of asset 'valuation' and depreciation policy. Before the Second World War there was no general consensus on charging or disclosing depreciation; Edwards (1981, p. 22), for example, found that few of the companies in his sample from the iron and steel industry made 'regular charges for depreciation in accordance with a predetermined structure of amortisation rates' and that some still viewed depreciation as an appropriation of profits. These findings suggested that 'the widespread inclusion in the profit and loss account of a systematically calculated charge for depreciation is a post 1940 development' (Edwards, 1981, p. 48).

In the case of the shipping industry the Inland Revenue used a 4% depreciation rate for taxation purposes, but RM's general policy for fleet depreciation, at least until 1926, was to charge 5% of the cost against profits each year, although from 1910 the amounts were not revealed to shareholders. When ships were sold they almost invariably realised more than their book value, which tends to confirm that the depreciation charges were in general more than adequate as historical cost allocations, even though Royal Mail purchased a large number of ships at the end of the war when new tonnage was unusually expensive.

The company's annual depreciation charges expressed in £000, as a rate per fleet ton and as a percentage on fleet book values, are set out in Table 3, together with corresponding information on the set of cargo boat companies whose financial results were tabulated in Fairplay. Fleet depreciation charges do not have a simple functional relationship with book values[16] and RM was a liner rather than a cargo boat company,[17] but certain general conclusions can still be drawn regarding the company's depreciation policy.

A depreciation rate of 5% on cost would represent 10% on the book value of a half-life fleet given stable costs and an average life of 20 years;

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[16]Fleet depreciation charges are a function of the depreciation percentage actually applied, the age of the fleet and the stability of cost levels between retiring and replacement tonnage.
[17]No corresponding information appears for liner companies.

the expansion of Royal Mail's fleet under Kylsant and the rising costs of new shipping tonnage would tend to drive the 10% towards 5%. It appears from Table 3 and the court evidence that the accumulated depreciation provisions were augmented during 1916–18 with perhaps a doubling of normal depreciation charges, but there is little indication, except possibly in 1922, of any subsequent cuts in depreciation to enhance reported profits.

Royal Mail was also far less flexible in its approach to depreciation than cargo boat companies as a whole, who under-depreciated in less prosperous years and charged rates of over 20% on book values during the unprecedented boom years of the First World War. RM's depreciation policy contributed to fleet values which, throughout the entire period 1917 to 1927, were below those for liner companies as a whole, although only narrowly so in 1922 and 1923, when the effects of RM's considerable fleet purchases, at the high cost ruling at the end of the war, were still being felt (see Table 4).[18]

RM's depreciation policies may have been intended to operate as a 'silent' secret reserve and may be unsatisfactory by modern standards, but by the standards of the time they were prudent[19] and relatively consistent, leading to a sustained pattern of conservative fleet valuations rather than any subsequent enhancement of profits. This caution was doubtless advisable, given the collapse in the realisable value of shipping after 1921, and probably left Royal Mail rather less exposed in this respect than most other liner companies.

Royal Mail's reserves, provisions and reported profits

> Attorney-General: 'Is this the problem, that from 1921 to 1926 the company had never earned anything like enough to pay its debentures?'
> Morland: 'That depends, again, on what you mean by earned.' (Brooks, 1933, p. 188)

The prosecution consistently maintained that RM had used transfers from hidden reserves and other special credits to support dividend payments after the downturn in trade in 1921.[20] This position was

[18]The sharp decline in RM's fleet book values per ton during the war years is, however, both in absolute terms and relative to other liner companies, so marked that it can hardly be explained by the known increase in depreciation charges. Alternative explanations are an atypical pattern of tonnage losses during the war or additional depreciation charges that were not revealed to the auditors.

[19]This is consistent with the observation of Green and Moss (1982, p. 65) that 'unlike many other British companies in the mid-1920s Kylsant and his fellow directors were rarely prepared to suspend depreciation provisions in order to maintain profitability'. This conclusion applies to the period 1915–27; in 1928 Royal Mail sharply reduced its depreciation charge (Green and Moss, 1982, p. 84).

[20]See, for example, Brooks (1933, p. 214).

supported by Exhibit 21 (Brooks, 1933), which analysed the components of the published trading profits of RM. This statement was, however, organised so as to reflect the prosecution's view of events; a more neutral presentation has been attempted in Table 5 to identify the approximate effect of Royal Mail's reserve and provision accounting on the profits reported by the company in the period 1915–27.

No claim will be made that Table 5 provides a definitive view of the 'real' profits of the period. The essence of provision accounting, and the accruals concept as a whole, is the making of reasonable judgements from available information about matters that relate to a current accounting year but which have not crystallised into an unequivocal monetary form. There are no objective criteria by which to assess these judgements, and even access to RM's archives does not provide enough information to identify with any precision the judgements of the time that could best be seen as even-handed.

The figures set out in Table 5 therefore need to be treated with caution, but they do provide a more complete and less partisan view of Royal Mail's accounting policies than those provided at the trial in 1931. The detailed judgements made in allocating amounts to the various categories and years in Table 5 are set out below, in the same sequence that these items have been discussed earlier in this paper.

government and charter exchange losses: treated as genuine provisions.

war contingencies: treated as a genuine provision but which could have been released in 1919 rather than 1922.

excess profits duty: the write-off in 1921 of £300,000 against investments has instead been released (as a prior-year item). The £100,000 added to trading profits in 1922, being approximately one-half of the excess of the 1921 balance over the sum subsequently agreed as the further liability for 1915–21, has been treated as a released (prior-year) item for 1922. The additions to the profits of 1923–27, although not changed in total amount, have been rescheduled on a prudent basis that relates more closely to repayments received in each of those years (which are shown in Table 1).

income tax and corporation profits tax: the retentions in December 1922 of £564,000 to provide for tax liabilities became unnecessary as RM ceased to make taxable profits and could have been released more quickly. In the absence of precise information these retentions have been released as prior-year items evenly over the first three years that RM received rather than paid income tax, 1923–25, and the remaining additions to profit have again been rescheduled to relate more closely to repayments received in each of those years.

Table 5
Summarised Trading and Profit and Loss Accounts, Royal Mail, 1915–27 (£000)

Adjusted Profits	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1915–27	1922–27
Net receipts from shipping	1174	2023	1978	689	1632	1495	(194)	(64)	162	239	60	2	121		520
Fleet depreciation	(350)	(296)	(173)	(146)	(353)	(329)	(572)	(496)	(621)	(648)	(636)	(621)	(493)		3515
Profits (losses) on sales of ships	163	64	33	64	63	64	64	271	35	(71)	17	30	44		326
Plant and premises depreciation	(16)	(19)	(19)	(16)	(10)	(12)	(14)	(10)	(19)	(21)	(17)	(15)	(10)		(92)
Profit (losses) on sale of premises				(19)							6		90		96
Profit for year on internal operations	971	1772	1819	572	1332	1218	(716)	(299)	(443)	(501)	(570)	(604)	(248)		(2665)
Investment receipts	324	287	389	395	413	634	1573	435	422	404	261	268	559		2349
Profit on sales of group companies						250					490	26			516
Trading profit for year, before tax	1295	2059	2208	967	1745	2102	857	136	(21)	(97)	181	(310)	311		200
Income and corporation profits tax	(44)	(162)	(100)	(60)	(237)	(134)			115	355	110	265	9		854
Excess profits duty	(70)	(800)	(400)	(100)	(342)	(424)	(125)		475	290		515	233		1513
Trading profit for year, after tax	1181	1097	1708	807	1166	1544	732	136	569	548	291	470	553		2567
Prior year items: provisions no longer needed					45		444	100	188	188	188				664
Adjusted Trading Profits (pre interest and dividends)	1181	1097	1708	807	1211	1544	1176	236	757	736	479	470	553	11955	3231
Secret reserves:															
deferred repairs						(280)	280								
fleet depreciation	(88)	(295)	(172)	(147)	(88)	(82)									
premises costs written off	(90)		(252)			(30)									
investment costs written off	(37)		(496)	(17)	(240)										
	(215)	(295)	(920)	(164)	(328)	(392)	280							2034	
Published Trading Profits (pre interest and dividends)	803	738	725	579	775	838	668	726	779	773	731	439	697	9271	4145
Interest charge for year	299	229	218	218	218	218	314	282	281	268	281	273	247		1632
Proposed dividends	110	245	321	332	352	413	414	469	534	534	534	384	534		2989

Sources: Draft accounts, Royal Mail archives, University College London; Court depositions, Public Records Office.

premises: the transfer in 1920 has been treated as a secret reserve.

deferred repairs: the transfer in 1920 has been treated as a secret reserve and the remainder of the balance at December 1921 has been released (as a prior-year item) in that year rather than in 1923–24.

insurance fund transfers: treated as provisions.

asset sale profits (1915 and 1920): treated as non-trading profits of the years concerned rather than adjusted directly against assets.

insurance payments surplus: treated as non-trading profits of 1915–21, rather than 1922.

sales of steamers: treated as non-trading profits of the years concerned.

fleet depreciation: half the depreciation charges for 1916–18, one fifth of the charges for 1915 and 1919–20 (relating to the use of a 5% rather than 4% depreciation rate) and the unusually large part of the charges for plant and premises depreciation in 1915 and 1917 have all been treated as transfers to secret reserve.

The components of the published annual figures for trading profits for the period 1915–27, based on the preceding discussion, are identified in Table 5, which thus quantifies in an approximate way the extent of Royal Mail's secret reserve and other accounting practices. The total of the 'adjusted trading profits', together with the computed secret reserves, exceeds the total of the 'published trading profits' by £650,000,[21] being the amount of three profits in the period 1915–21 which were set directly against assets rather than taken to trading profits.

The pattern of the 'adjusted trading profits' (after tax but before interest and dividends) suggests that the published profits of RM for the period 1922–27 were overstated by 25–30% on average, or 60% before the inclusion of prior-year items, with the effects concentrated upon 1922 and 1925. They also show that secret reserve accounting took place in the period 1915–21, that it was effected through accelerated depreciation charges rather than the exaggeration of prospective liabilities, but that these reserves were not used to enhance the profits of the period 1922–27 to any significant extent, perhaps because of the decline in the value of shipping assets or perhaps because other 'mechanisms' were available.

It is also clear from Table 5 that the ability of RM to maintain their depreciation charges and to report the earnings that supported the interest and dividend payments was dependent upon, in order of importance, investment receipts from other companies in the group, taxation refunds and

retentions, and the release of provisions made in previous years and no longer needed.

The receipts from RM's investments in other companies in 1922–27 amounted to £2,850,000 (including the related profits on the sale of some of these companies), thus matching the dividends paid by Royal Mail in that same period. The importance of this source of income, and of the lack of any legal requirement to produce consolidated accounts, to Kylsant's freedom of manoeuvre has been clearly shown by Davies and Bourn (1972, pp. 109–112) and Green and Moss (1982, Chapter 5) and needs no further emphasis here, but perhaps less familiar is the claim that the other important contributions to the reported profits of 1922–27 came from taxation refunds and retentions that largely post-date 1922, and from the release of provisions from earlier years rather than from the deliberate use of secret reserves built up during the war years.

Conclusions

Royal Mail has long been seen as central to the appraisal of secret reserve accounting but, while the trial evidence shows clearly that the non-disclosure of the components of reported profits in the period 1922–27 disguised the lack of trading profits, it does not covincingly establish secret reserve accounting as the mechanism used in this deception.

The material contained in RM's archives shows that there were eight accounts described in the internal records as 'reserves' which were not disclosed on the company's balance sheets but it also indicates that most of these accounts would now be described as 'provisions'.

The company did set sums aside to secret reserve during the war years but through the mechanism believed by Marriner to have been widespread, namely excessive depreciation charges. These transfers did not seem to have been used to enhance profits in the period 1922–27.

Royal Mail did not reveal the considerable sums set aside as tax payable in 1915–21, or the sums received or retained from dividend payments during 1922–27, perhaps because these figures might have been damaging to the company's public standing.

It is hardly surprising that Kylsant was a profit-smoother, given the nature of his contract with Royal Mail,[22] but the information contained in the internal records of the company strongly suggests that the lack of trading profits after the war was

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[21]Table 5, second column from right; (£000) 11,955 − 2,034 = 9,921; (£000) 9,921 − 9,271 = 650.

[22]This provided for a bonus worth about £500,000 p.a. in present-day terms in each year in which the company paid dividends of 5% to its ordinary shareholders; Reports of General Meetings, (15 May 1907, p. 17), Royal Mail archives. University College London.

disguised by means of the non-disclosure of non-trading incomes of the period, rather than by means of the secret reserve accounting device with which its name is synonymous.

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Beta Geared and Ungeared: Further Analysis of the Case of Active Debt Management

Colin D. B. Clubb and Paul Doran*

Abstract—This paper extends previous work by Appleyard and Strong (1989) concerned with the implications of an active debt management policy (ADMP) for de-gearing a geared firm's equity beta. First, alternative derivations of the ADMP beta de-gearing formulae for an MM perfect capital market with corporation tax and for a world with corporation and personal taxes are presented. These derivations do not require the assumption of level perpetuity expected cash flows and therefore indicate a broader basis for the ADMP beta de-gearing formulae than previously demonstrated. Secondly, possible investor valuation errors from use of a PDMP (passive debt management policy) valuation methodology to value firms pursuing an ADMP are analysed in the context of an MM perfect capital market with corporation tax. Given constant (or zero) growth in the firm's expected unlevered cash flows, this analysis indicates that degearing errors from use of the PDMP beta de-gearing formula will only be associated with valuation errors if there is a change in the firm's target debt ratio and that the significance of such valuation errors will be largely dependent on the expected growth rate.

Introduction

In a recent paper in this journal, Appleyard and Strong (1989) provided an analysis of the implications of an active debt management policy (ADMP) for de-gearing the beta of a geared firm's equity. The aim of this paper is to extend Appleyard and Strong's analysis in two respects. First, more general derivations of the ADMP de-gearing formulae given in equations (11) and (22) of their paper are presented. These derivations do not require the assumption of a level perpetuity for the firm's expected after-tax unlevered cash flows and thereore indicate a broader basis for the ADMP de-gearing formulae than demonstrated in their paper. Secondly, possible investor valuation errors from application of a valuation methodology based on the assumption of a passive debt management policy (PDMP) to firms pursuing an ADMP are analysed, given the broader context of a perfect capital market with corporation tax. The latter analysis provides an indication of the extent to which de-gearing errors resulting from the divergence of the PDMP and ADMP beta de-gearing formulae may be associated with significant valuation errors.

The ADMP beta de-gearing formulae

The derivations presented in this part of the paper are based on the Miles and Ezzell (1980) analysis of the valuation of a levered cash flow stream under an ADMP. Given that this analysis is based on the MM (Modigliani and Miller, 1958 and 1963) assumption of a perfect capital market with corporation tax, the beta de-gearing formula associated with this capital market setting is derived first (equation (11) in Appleyard and Strong's paper). The analysis is then adjusted to derive the beta de-gearing formula for the case of personal and corporation taxes (equation (22) in Appleyard and Strong's paper).

Application of the Miles and Ezzell analysis of the valuation of a levered cash flow stream to firm valuation suggests that the value of a firm pursuing an ADMP, V_{L0}, can be expressed as follows:

$$V_{L0} = \frac{X_1 + V_{L1}}{(1 + r_U)} + \frac{T_C r_D L V_{L0}}{(1 + r_D)} \qquad (1)$$

where X_1 is the expected after-tax unlevered cash flow[1] at the end of period 1, V_{L1} is the expected value of the firm at the end of period 1, T_c is the corporation tax rate, L is the firm's target debt ratio, r_U is the unlevered required rate of return and r_D is the cost of debt capital. The second term on

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[1] Expected net after-tax operating cash flow of the unlevered firm less expected funds for investment.

the right hand side of equation (1) is the present value of the period 1 tax shield. Given that the period 1 tax shield is based on the known debt level, LV_{L0}, the discount rate used in this term is r_D. Tax shields beyond period 1 depend on expectations of the firm's unlevered cash flows at the beginning of the particular periods to which they relate and, hence, prior to the period of receipt, expectations of these tax shields will vary in relation to changes in expectations regarding the firm's unlevered cash flows. The present value of these subsequent tax shields is therefore determined by discounting their expected values at the unlevered rate, r_U, for all periods prior to the period of receipt and discounting at r_D only for this final period. Consequently, the expected present value of these tax shields at the end of period 1, a component of V_{L1}, is discounted at the unlevered rate, r_U, in equation (1).

The ADMP beta de-gearing formula can be derived very easily from equation (1). Thus, given that the first term on the right hand side of equation (1) can be written as:

$$V_{L0} - T_C r_D L V_{L0}/(1 + r_D) \qquad (2)$$

it follows from equations (1) and (2) and the linear additivity property of betas that:

$$\beta_L = \beta_U [1 - T_C r_D L/(1 + r_D)]$$
$$+ \beta_D [T_C r_D L/(1 + r_D)] \qquad (3)$$

where β_L, β_U and β_D are the betas of the levered firm, the unlevered firm and the levered firm's debt respectively. It also follows from the linear additivity of betas that:

$$\beta_L = \beta_E (1 - L) + \beta_D L \qquad (4)$$

where β_E is the beta of the levered firm's equity. Equating (3) and (4) and solving for β_E gives the ADMP beta de-gearing formula:

$$\beta_E = \beta_U + (\beta_U - \beta_D) \left(1 - \frac{T_c r_D}{1 + r_D}\right) \frac{L}{1 - L} \qquad (5)$$

The above analysis can readily be adjusted to take account of personal taxes levied at different rates on equity and debt income. As shown by Appleyard and Strong, the present value of the period 1 tax shield in this case can be expressed as follows:

$$\frac{[(1 - T_{PD}) - (1 - T_C)(1 - T_{PE})]r_D LV_{L0}}{1 + r_D(1 - T_{PD})} \qquad (6)$$

where T_{PD} and T_{PE} are the uniform marginal personal tax rates on debt and equity income respectively. Using the same reasoning as for the case of corporation tax only, the total present value of all subsequent tax shields is equal to their expected present value as at the end of period 1, discounted over period 1 at the (after-tax) unlevered required rate of return, $r_U(1 - T_{PE})$. Thus,

the value of the levered firm is now given by:

$$V_{L0} = \frac{X_1(1 - T_{PE}) + V_{L1}}{1 + r_U(1 - T_{PE})} + \frac{Tr_D(1 - T_{PD})LV_{L0}}{1 + r_D(1 - T_{PD})} \qquad (7)$$

where the second term on the right hand side of (7) represents the present value of the period 1 tax shield given by (6) and, hence, where the term T is as follows:

$$T = 1 - \frac{(1 - T_C)(1 - T_{PE})}{(1 - T_{PD})} \qquad (8)$$

Given that the first term on the right hand side of equation (7) can be written as:

$$V_{L0} - \frac{Tr_D(1 - T_{PD})LV_{L0}}{1 + r_D(1 - T_{PD})} \qquad (9)$$

it follows from repeating the derivation in equations (3)–(4), with T_C and r_D replaced by T and $r_D(1 - T_{PD})$ respectively, that:

$$\beta_E = \beta_U + (\beta_U - \beta_D)$$
$$\times \left(1 - \frac{Tr_D(1 - T_{PD})}{1 + r_D(1 - T_{PD})}\right) \frac{L}{1 - L} \qquad (10)$$

This is the same as the beta de-gearing formula derived by Appleyard and Strong for the case of personal and corporate taxation under the assumption of level perpetuity unlevered cash flows.[2]

The above analysis has provided derivations of the ADMP beta de-gearing formulae which involve no explicit assumptions regarding the pattern of the firm's expected unlevered cash flows. Miles and Ezzell (1985) have derived a similar formula (their equation (25)) in a perfect capital market with corporate tax, by considering explicitly the covariance term contained in the beta terms. However this is not necessary as the linear additivity of covariances immediately gives the linear additivity of the betas and hence, as demonstrated above, the de-gearing formulae can be derived in a considerably more straightforward manner.

While indicating a broader basis for the ADMP beta de-gearing formulae than demonstrated by Appleyard and Strong, it will be noted that the above analysis differs from the PDMP case where the beta de-gearing formulae for the level perpetuity case (Buckley, 1981; Schnabel, 1983) are not generally applicable for other cash flow patterns. This difference is illustrated in the next part of the paper where ADMP and PDMP beta de-gearing formulae are compared for the case of growth in the firm's expected unlevered cash flows.

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[2] The above analysis assumes that capital gains tax is zero, hence suggesting that such an assumption is necessary for an extension of the Appleyard and Strong analysis to the case of non-constant cash flows. See Clubb and Doran (1991) for an analysis of the impact of capital gains tax on firm valuation. Given the assumption of zero capital gains tax, equation (10) can also be applied to the UK imputation tax system by replacing the tax parameters with their UK equivalents as presented in Ashton (1989).

Investor valuation errors

This part of the paper considers possible valuation errors by individual investors who use a PDMP methodology to value a firm pursuing an ADMP. It is assumed that the correct betas and costs of the firm's equity and debt capital are available to such investors and that this information is used by them to infer (incorrectly) the firm's unlevered beta and unlevered required rate of return. Other assumptions are constant (or zero) growth in the firm's expected unlevered cash flows and an MM perfect capital market with corporation tax. The analysis is divided into three parts: first, it is shown that no valuation error occurs if there is no change in the firm's target debt ratio; secondly, de-gearing errors in relation to the inference of the firm's unlevered beta and unlevered required rate of return are considered; thirdly, valuation errors related to a change in the firm's target debt ratio are presented for selected parameter values. These results are then contrasted with those given by Lewellen and Emery (1986) and are shown to produce much smaller valuation differences than the latter case.

It is not difficult to show that the incorrect use of a PDMP valuation methodology will nevertheless give a correct valuation in the case where the firm maintains its established target debt ratio, L. Thus, the PDMP valuation approach, as shown by Myers (1977), will value the firm as follows:

$$V_L = X/(r_L - g) \qquad (11)$$

where X represents the expected after-tax unlevered cash flow in the next period, g is the expected growth rate in the firm's unlevered cash flow and r_L is the after-tax weighted average cost of capital (WACC) given by:

$$r_L = r_E(1 - L) + r_D L (1 - T_C) \qquad (12)$$

Given that the correct value of a firm pursuing an ADMP, for *any* pattern of expected unlevered after-tax cash flows, can be expressed as the present value of those cash flows discounted at the after-tax WACC given by equation (12) (Miles and Ezzell, 1980; Lewellen and Emery, 1986), equation (11) also represents the value of the firm given by the ADMP valuation approach.

Although the use of a PDMP valuation approach results in correct valuation of the firm above, the divergence between the ADMP and PDMP beta de-gearing formulae[3] indicates that the measure of the firm's unlevered beta generated by the PDMP approach, β_U^P, and the corresponding measure of the unlevered required rate of return, r_U^P, will be incorrect. Thus, the growth

version of the PDMP beta de-gearing formula suggests that:[4]

$$\beta_U^P = \left[\beta_E(1 - L) + \beta_D \left(1 - \frac{T_c r_D}{r_D - g} \right) L \right] \bigg/ \left(1 - \frac{T_c r_D L}{r_D - g} \right) \qquad (13)$$

and hence, using the CAPM and equation (12), that:

$$r_U^P = \left(r_L - \frac{T_c r_D L_g}{r_D - g} \right) \bigg/ \left(1 - \frac{T_c r_D L}{r_D - g} \right) \qquad (14)$$

By contrast, the ADMP beta de-gearing formula, equation (5), gives the correct unlevered beta, β_u, as follows:

$$\beta_U = \left[\beta_E(1 - L) + \beta_D \left(1 - \frac{T_c r_D}{1 + r_D} \right) L \right] \bigg/ \left(1 - \frac{T_c r_D L}{1 + r_D} \right) \qquad (15)$$

and hence, again using the CAPM and equation (12), gives the following correct measure of the unlevered rate:[5]

$$r_U = \left(r_L + \frac{T_c r_D L}{1 + r_D} \right) \bigg/ \left(1 - \frac{T_c r_D L}{1 + r_D} \right) \qquad (16)$$

Valuation errors associated with the use of a PDMP valuation methodology incorporating r_U^P, the incorrectly inferred unlevered rate of return, are now analysed for the case of a change in the firm's target debt ratio.[6] The correct value of the firm, V_{L^*}, at the revised target debt ratio, L^*, based on the ADMP valuation methodology is as follows:

$$V_{L^*} = X/(r_{L^*} - g) \qquad (17)$$

where r_{L^*}, the new WACC at the revised target debt ratio, is given by replacing r_L and L in

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[3] For the level perpetuity case, see Appleyard and Strong, 1989, pp. 172–73.

[4] The PDMP beta de-gearing formula for the growth case can be readily derived using the same approach as used by Appleyard and Strong for the level perpetuity case (their equations (5)–(8)) but using a growth based valuation expression (Lewellen and Emery, 1986, p. 421, equation (13)) in place of the familiar MM level perpetuity valuation expression (Appleyard and Strong, 1989, p. 170, equation (1)).

[5] Note that rearrangement of equation (16) gives the Miles and Ezzell WACC formula (Miles and Ezzell, 1980, p. 726, equation (20)). Their result was derived on the assumption that r_U was constant and did not require the use of the one period CAPM. This arises because the relationship between r_U and r_E derived using the one period CAPM holds under more general conditions and is therefore not subject to those criticisms of the one period CAPM (Constantinides, 1978). Any general equilibrium model in which r_U is constant, such as Merton (1973), will give rise to the same formulae.

[6] This follows from the definition of L as used in ADMP and PDMP formulae. A large exogenous shock may cause a firm, whether pursuing an ADMP or a PDMP, to revise its target Debt/Equity ratio in the light of this event. If the probability of another such shock is small, both the company and the market will consider L as fixed at the new revised level.

Table 1
PDMP Valuation Errors for $L = 40\%$, $T_c = 35\%$, $r_D = 10\%$

		$L^* = 30\%$	$L^* = 35\%$	$L^* = 45\%$	$L^* = 50\%$
$g = 0\%$	$r_U = 12\%$	−0.67%	−0.34%	0.36%	0.73%
	$r_U = 16\%$	−1.47%	−0.75%	0.78%	1.59%
	$r_U = 20\%$	−1.92%	−0.98%	1.02%	2.09%
$g = 3\%$	$r_U = 12\%$	−1.45%	−0.75%	0.80%	1.65%
	$r_U = 16\%$	−2.87%	−1.48%	1.57%	3.25%
	$r_U = 20\%$	−3.56%	−1.83%	1.95%	4.03%
$g = 6\%$	$r_U = 12\%$	−5.00%	−2.66%	3.04%	6.55%
	$r_U = 16\%$	−8.05%	−4.28%	4.90%	10.55%
	$r_U = 20\%$	−9.17%	−4.87%	5.58%	12.02%

Table 2
PDMP Valuation Errors for $r_U = 20\%$, $T_c = 35\%$, $r_D = 10\%$

		$g = 0\%$	$g = 3\%$	$g = 6\%$
$L = 20\%$	$L^* = 30\%$	1.85%	3.39%	8.64%
$L = 30\%$	$L^* = 40\%$	1.96%	3.69%	10.09%
$L = 40\%$	$L^* = 50\%$	2.09%	4.03%	12.02%
$L = 50\%$	$L^* = 60\%$	2.23%	4.43%	14.68%
$L = 60\%$	$L^* = 70\%$	2.38%	4.90%	18.58%

equation (16) with r_{L^*} and L^* respectively and rearranging as follows:

$$r_{L^*} = r_U - T_C r_D L^*(1 + r_U)/(1 + r_D) \quad (18)$$

The incorrect valuation based on the use of the PDMP valuation approach, on the other hand, is given by:

$$V_{L^*}^P = X/(r_{L^*}^P - g) \quad (19)$$

where $r_{L^*}^P$, the incorrectly inferred WACC for the revised target debt ratio, is given by replacing r_L and L in equation (14) with $r_{L^*}^P$ and L^* respectively and rearranging as follows:

$$r_{L^*}^P = r_U^P - T_c r_D L^*(r_U^P - g)/(r_D - g) \quad (20)$$

and where r_U^P in equation (20), as discussed above, is obtained from information relating to the original target debt ratio, L, as given by equation (14).

Table 1 provides percentage firm valuation errors from the incorrect use of the PDMP valuation approach, assuming an original target debt ratio, L, of 40%, T_C of 35% and r_D of 10%, for various values of L^*, g, and r_U.[7] The main features of Table 1 are the small size of valuation errors for the level perpetuity cases considered, the increasing rate at which valuation errors increase as the assumed growth rate increases and the large size of

valuation errors for the case of 6% growth, particularly for higher values of r_U and higher absolute changes in the target debt ratio. The errors reported in Table 2 indicate that the relatively small size of the valuation errors for the level perpetuity case is not affected by the assumed value of L but that the growth effects described above become more pronounced the larger the value of L.

These results can be contrasted with the values given by Lewellen and Emery (1986, p. 425). They take r_U as given and examine the slope coefficient, that is the change in the value of the firm for a given change in L. They are thus considering how the value of a firm varies with L according to which paradigm (i.e. ADMP, PDMP) is used to value the firm. They obtain some very large valuation differences (exceeding 300%) and typically differences of about 50% over our range of values. This contrasts with the much smaller valuation errors (not exceeding 19%) obtained in this paper. It is therefore important to distinguish between valuation differences due to difference in corporate debt management policy and valuation errors due to incorrect investor assumptions regarding the debt management policy of the firm.

Conclusions

This paper has provided derivations of the ADMP beta de-gearing formulae which are not dependent on the assumption of level perpetuities for the firm's expected unlevered cash flows and which therefore indicate a broader basis for these formulae than demonstrated by Appleyard and Strong. It has also considered some valuation implications of the divergence between the ADMP and PDMP beta de-gearing formulae by analysing possible investor valuation errors arising from the incorrect use of a PDMP methodology to value firms pursuing an ADMP, given the broader context of an MM perfect capital market with corporation tax. Given the assumption of constant (or zero) growth in the firm's expected unlevered cash flows, the latter analysis indicated that de-gearing

[7]Because r_U is specified in Tables 1 and 2, r_U^P requires the calculation of r_L using equation (16) and the substitution of r_L in equation (14).

errors from use of the PDMP beta de-gearing formula to de-gear the firm's correct equity beta will only be associated with valuation errors in the event of a change in the firm's target debt ratio and that the significance of such valuation errors will be largely dependent on the expected growth rate.

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Modigliani and Miller Again Revisited: The Cost of Capital with Unequal Borrowing and Lending Rates

M. J. Dempsey*

Abstract—The financial literature asserts that financial managers must borrow at least to some degree if they are to optimise the value of their companies. This result has been described in the literature as 'perhaps the single most important result in the theory of corporate finance obtained in the last 30 years' (Copeland and Weston, 1988, p. 443). Based on US tax systems, the value added to a company by debt has been estimated as high as 35 to 50% of the debt's market value. More recently in this journal, Ashton (1989b) has argued that under the present UK tax system, the theoretical tax advantage afforded by debt should be estimated at no more than 13% of the debt's market value. The contribution of this paper is to draw attention to an aspect of borrowing that has largely escaped attention, but which nevertheless affects the above conclusions: namely, that the market spread between borrowing and lending constitutes a 'cost' for corporate borrowing. This paper demonstrates that in the context of the present UK tax system, this 'cost' of borrowing is sufficient entirely to nullify the formerly perceived financial tax benefits of corporate borrowing. We conclude that, at present, corporate borrowing could imply a net *disadvantage* for the valuation of a company's equity by about 6 or 7% of the debt's market value.

Introduction

The papers of Modigliani and Miller (1958, 1961 and 1963), Miller (1977) and Modigliani (1982) alongside the Capital Asset Pricing Model (CAPM) provide the essential foundation for academic enquiry into the financial implications of corporate borrowing. The resulting theory shows that, as a company acquires debt, the market value of its remaining equity should increase—at least up to some level of debt. The increase in equity value consequent on debt has been estimated to be as high in the USA as 35 to 50% of the debt's market value. This is a somewhat startling result and, in the absence of specific costs of bankruptcy, is independent of whether the debt is classed as 'risky' or 'risk-free'. The question is therefore posed as to whether an optimal financial structure for the company must exist. This is one of the most important issues in corporate finance. The implications are far-reaching: (i) by some judicious mix of debt and equity financing, financial management can maximise the value of the firm, and (ii) a firm's investment decisions cannot be made independently of their financing—debt or equity—arrangements. In summary, financial management becomes sharply challenged to justify its financing arrangements vis-à-vis debt and equity.

Recently in this journal, the Modigliani and Miller—CAPM analysis has been reworked in the context of the UK imputation tax system (Ashton, 1989b). Ashton concluded that the theoretical tax advantage afforded by debt should presently be valued at no more than 13% of the debt's market value. This paper extends the work of Ashton. The assumption of equal borrowing and lending rates for the risk-free asset is relaxed. That is to say, we assume that even when the risks of default on borrowing obligations are zero, there yet remains a market 'spread' between the interest rates offered to investors wishing to borrow and those wishing to lend the risk-free asset. The important conclusion of this paper is that under the present UK imputation tax system, the market spread between borrowing and lending rates is sufficient to nullify the hitherto theoretically perceived tax benefits of corporate borrowing. Indeed, the balance is tipped and there is presently a distinct theoretical disadvantage to corporate borrowing—of the value of about 6 or 7% of the debt's market value.

This paper continues the work of previous UK academics who have advanced the development of financial theory in the context of the UK tax imputation system. Since King in 1974, authors such as Kent and Theobald (1980), Fung and Theobald (1984), King (1977), McDonald (1981), Stapleton and Burke (1977), Franks and Broyles (1979), Pointon (1981, 1986), Rutterford (1988), Davidson (1989) and Ashton (1989a) have analysed implications of the UK imputation tax

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system. In this paper, we rework the essential equations of the Modigliani Miller—CAPM framework in the context of unequal borrowing and lending rates for the risk-free asset.

The equation for the value of debt

A company's (permanent) debt implies a decrease in the shareholders' collective earnings after interest and tax (in perpetuity), Δ, that can be expressed:

$$\Delta = D * i * (1 - T) * (1 - Te) \qquad (1)$$

where

$D =$ the nominal value of the company's debt with interest rate i,

$T =$ the rate of corporation tax, and

Te is the effective personal tax rate on remuneration from share ownership. Te is therefore a function of personal tax rates on dividend and capital gains where the function is dependent on how the shareholder receives his remuneration—that is, via dividend or capital gains.

The standard textbook assumption (for example, Copeland and Weston, 1988, ch. 13) is that the appropriate capitalisation rate for these cash flows is $rb * (1 - Td)$, where rb is the rate at which the market capitalises the interest stream required to service debt of this risk class; that is, rb is defined by:

$$B = \frac{D * i}{rb} \qquad (2)$$

where

$B =$ the market value of the company's debt (with nominal value D and interest rate, i),

and

$Td =$ the personal tax rate on income.

This leads to the well-known valuation relationship between the value of the geared company (Vg) in terms of an (otherwise identical) ungeared company (Vu):

$$Vg = Vu + B * (1 - \gamma) \qquad (3)$$

where

$$\gamma = \frac{(1 - T) * (1 - Te)}{(1 - Td)} \qquad (4)$$

Alternatively, Equation (3) can be restated by saying that the value Λ added to a company by virtue of its debt (with market value B) is:

$$\Lambda = B * (1 - \gamma) \qquad (5)$$

and Λ is referred to as the corporate tax shield.

Unequal borrowing and lending rates for the risk-free asset

Even though the likelihood of a company defaulting on its repayment commitments may be recognised in the market as effectively zero, a reality of commercial life is that the repayment rate will exceed the return offered by risk-free investments, i.e. there is a 'spread' between risk-free borrowing and lending rates. The implication for the 'efficient frontier' in the CAPM is as depicted in Figure 1. For an investor to the right of sd_2, i.e. one who borrows so as to purchase shares, the operative risk-free rate is rb. For an investor who 'lends', i.e. who has a proportion of his/her investment in risk-free assets, the operative risk-free rate is rf.

Figure 1
The CAPM: the efficient frontier
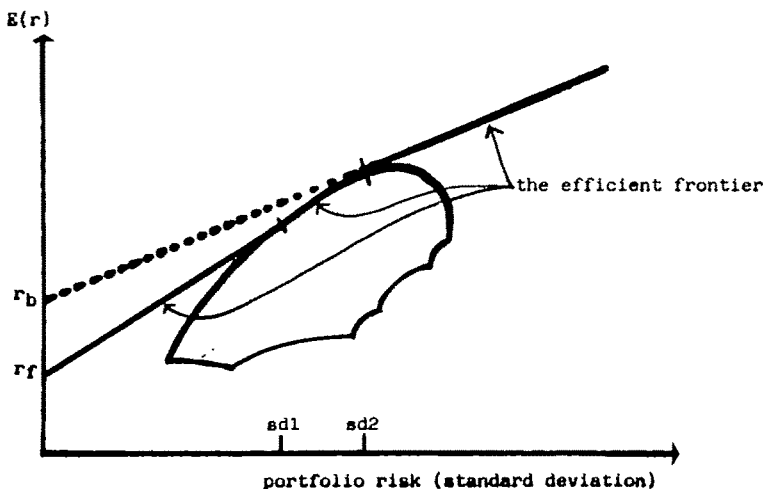
For both the company with debt and the investor who 'borrows' we identify the opportunity cost of the risk-free asset as *rb*. Equations (1)–(4) thereby remain intact. From the perspective of the investor with a proportion of his/her investment in risk-free securities, however, the 'spread' between the market risk-free borrowing and lending rates represents a cost. Intuitively, for this investor, the value of the tax shield must somehow be downward adjusted. In order to quantify this adjustment, the most straightforward approach is to readjust the familiar proof of the tax shield as presented in the previous section, as follows.

Equation (1) presented the decrease in the company's earnings after interest and tax. For the shareholder whose opportunity cost of the risk-free asset is the net lending rate (that is, the gross lending rate $(rf)*(1 - Td)$), the appropriate discount rate is $rf*(1 - Td)$. For this investor we therefore have:

$$Vg = Vu + B*\left(1 - \frac{(1-T)*(1-Te)}{(1-Td)}*\delta\right) \quad (6)$$

where

$$\delta = rb/rf \quad (7)$$

or

$$Vg = Vu + B*(1 - \gamma) \quad (8)$$

where

$$\gamma = \frac{(1-T)*(1-Te)}{(1-Td)}*\delta \quad (9)$$

A more formal proof of this result is presented in Appendix 1. Alternatively, arbitrage examples can readily be constructed to verify the formula.

With the analysis of the tax shield as developed in this section, we are able to assess the implications of corporate borrowing under the present UK tax system. This we turn our attention to in the following section.

The current value of the tax shield for UK companies

In the UK tax imputation system, personal income tax liability at the basic rate (*ts*) is imputed to have been paid on dividends received. The investor is liable for further income tax on the dividend only if his marginal income tax is at a rate higher than *ts*. If we assume that a shareholder receives all equity returns via dividends, then we have (Ashton 1989):

$$(1 - Te) = (1 - Td)/(1 - ts) \quad (10)$$

Equations (8) and (9) therefore become:

$$Vg = Vu + B*(1 - \gamma') \quad (11)$$

where

$$\gamma' = \frac{(1-T)}{(1-ts)}*\delta \quad (12)$$

and the value of the tax shield (from Equation 11) can be expressed:

$$\Lambda = B*(1 - \gamma') \quad (13)$$

Setting $T = 0.35$ and $ts = 0.25$, we conclude from Equations (12) and (13), that there ceases to be a tax advantage to corporate debt if both (i) shareholders can be classed as 'lenders' of the risk-free asset and (ii) δ is greater than about 1.15, that is, the 'spread' between borrowing and lending rates exceeds about 15%.

It is likely that the above conditions are met. Firstly, shareholders largely nullify the gearing effect of corporate borrowing on their behalf. The dominant shareholding institutions, the pension funds and life assurance companies, typically include holdings of the risk-free asset (fixed to interest, index-linked gilts, cash) on behalf of their clients at 15 to 25% of their portfolios (see, for example, Phillips and Drew Fund Management Limited: 'Pension Fund Indicators', May 1990). Individually held floating rate assets and public sector debt constitute about 33% of the personal sector's portfolio (*Bank of England Quarterly Review*, February, 1990). We can assume therefore that, by and large, shareholders will set the opportunity cost of the risk-free asset at $rf*(1 - Td)$.

Secondly, it is noted that, at the time of writing (March 1991), bank base rates are quoted at 12%, whilst bank overdrafts are quoted in the range 14–17%. Even if companies can arrange borrowing at the more favourable rate, the δ value (14/12) has exceeded the point at which there is a tax advantage to debt.

And we observe from Equations (12)–(13) that, if corporation tax were less, the financial advantage of debt would be negated at an even smaller 'spread'. It may be that, due to allowable delays in the company's actual payment of corporation tax, its effective value is less. In Appendix 2 it is shown that, effectively, the value of corporation tax is likely to be closer to 32%. Reappraisal of Equations (12)–(13) then indicates that there might cease to be a tax advantage to debt if the spread is greater than about 10%.

In summary, if we estimate corporation tax in the range 32–35%, identify tax at the standard rate as 25%, and, following the above discussion, assume a value for δ close to (1.2), Equations (12) and (13) combine to estimate a net tax disadvantage to corporate borrowing which is as much as 4 to 9% of the market value of the debt.

Modigliani and Miller—the CAPM: the textbook equations

The 'textbook' equations for the cost of capital in the context of the UK tax imputation system have been presented by Ashton (1989b). These can now be modified under the assumption of unequal borrowing and lending rates for the risk-free asset:

Modigliani and Miller's Second Proposition

This is stated mathematically in a world with tax at the corporate level as:

$$rs = ru + (ru - rb)*(1 - T)*\frac{B}{S} \qquad (14)$$

where, rs = shareholders' required return on their investment in the geared company; ru = shareholders' required return on their investment in an otherwise equivalent ungeared company; and rb is the borrowing rate, its divergence from rf is a function of the risk of default (consistent with the CAPM).

Assuming lending and borrowing to be risk-free and allowing for personal taxation, the above equation is transformed:

$$rs = ru + \left(ru - rf*\frac{(1 - Td)}{(1 - Te)}\right)*\frac{B}{S}*\gamma \qquad (15)$$

where γ is as in Equation (9).

Equation (15) may be verified most easily by substituting the following definitions for ru, rs:

$$ru = \frac{X*(1 - T)}{S + B*\gamma}$$

$$rs = \frac{(X - D*i)*(1 - T)}{S}$$

If we assume $(1 - Te) = (1 - Td)/(1 - ts)$ (Equation 10), γ is replaced by γ' (Equation 12). And Equation (15) therefore becomes:

$$rs = ru + (ru - rf*(1 - ts))*\frac{B}{S}*\gamma' \qquad (16)$$

'which, with $rf = rb$, gives:

$$rs = ru + (ru - rf*(1 - ts))*\frac{B}{S}*\frac{1 - T}{1 - ts} \qquad (17)$$

as in Ashton (1989b).

The CAPM

We write (as in Ashton, 1989b), the CAPM on an after-personal-tax basis:

$$E(rs)*(1 - Te) = rf*(1 - Td)$$
$$+ \beta g *(E(rm)*(1 - Te) - rf*(1 - Td)) \qquad (18)$$

where $E(rs)$, $E(rm)$ denote investors' expected return on security, s, and the market, respectively.

Algebraic manipulation of Equations (15) and (18) leads to:

$$\beta g = \beta u *\left(\frac{S + B*\gamma}{S}\right) \qquad (19)$$

If we assume $(1 - Te) = (1 - Td)/(1 - ts)$ (Equation 10), γ in the above equation can be replaced by γ' (Equation 12). And setting $\delta = 1$, we have:

$$\beta g = \beta u *\left(1 + \frac{B}{S}*\frac{(1 - T)}{(1 - ts)}\right) \qquad (20)$$

as in Ashton (1989b).

The WACC

The usual definition of the weighted average cost of capital is to weight the after-corporation-tax cost of debt by the percentage of debt in the firm's capital structure and add the result to the cost of equity multiplied by the percentage of equity. The equation is:

$$WACC = (1 - T)*rb *\frac{B}{(B + S)} + rs *\frac{S}{(B + S)} \qquad (21)$$

Algebraically, it is then easy to prove the relationship:

$$WACC = ru *\left(\frac{S + B*\gamma}{S + B}\right) \qquad (22)$$

Again assuming $(1 - Te) = (1 - Td)/(1 - ts)$ and setting $\delta = 1$, we have

$$WACC = ru *\left(1 - \frac{(T - ts)}{(1 - ts)}*\frac{B}{B + S}\right) \qquad (23)$$

as in Ashton (1989b).

Conclusion

The Modigliani-Miller result that corporate value increases with corporate debt is prefaced by Copeland and Weston in their text, *Financial Theory and Corporate Policy* (1988, p. 443), with the statement, 'This is perhaps the single most important result in the theory of corporate finance obtained in the last 30 years'. The contribution of this paper has been to draw attention to an aspect of borrowing that has largely escaped attention, but which nevertheless affects the Modigliani-Miller result, namely, that the market spread between borrowing and lending constitutes a real 'cost' for corporate borrowing. It has been demonstrated that, in the context of the present UK tax system,

the market spread between risk-free borrowing and lending rates is more than enough to nullify the perceived financial tax benefits of corporate borrowing. We conclude that, at present, corporate borrowing could imply a net disadvantage for the valuation of a company's equity by up to about 8% or 9% of the debt's market value.

The paper has reworked the important Modigliani and Miller—CAPM equations for the cost of capital under the assumption of non equal borrowing and lending rates for the risk-free asset.

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Appendix 1: The 'tax shield' with unequal borrowing and lending rates for the risk-free asset

We assume that the CAPM is a description on an after-personal-tax basis of investors' expectations of their returns. For lenders of the risk-free asset, the CAPM therefore provides:

$$\frac{E(rs)*(1-Te)-rf*(1-Te)}{COV(rs,rm)}$$

$$=\frac{E(rm)*(1-Te)-rf*(1-Td)}{VAR(rm)}=\lambda$$

where

$E(rs)$ = shareholders' expected return on security, s

$E(rm)$ = shareholders' expected return on the market portfolio,

COV = covariance,

VAR = variance

A security's required after-tax rate of return over and above that offered by risk-free lending is therefore proportional to the covariance of the security with the market.

The after-personal-tax return to shareholders in the ungeared company with EBIT in perpetuity is:

$$Ru=\frac{EBIT*(1-T)*(1-Te)}{Vu}$$

and in the geared company:

$$Rg=\frac{(EBIT-D*i)*(1-T)*(1-Te)}{S}$$

It follows that $COV(Rg,rm)=(Vu/S)*COV(Ru,rm)$.

We thereby have the result that investors will set the price (S) of shares in the geared company in accordance with:

$$\left(\frac{(EBIT-D*i)*(1-T)*(1-Te)}{S}-rf*(1-Td)\right)$$

$$=\frac{Vu}{S}*\left(\frac{EBIT*(1-T)*(1-Te)}{Vu}\right.$$

$$\left.-rf*(1-Td)\right)$$

which leads to,

$$S=Vu-\frac{D*i}{rf}*\frac{(1-T)*(1-Te)}{(1-Td)}$$

And using $B=D*i/rb=D*i/\delta*rf$, we arrive at:

$$S=Vu-B*\gamma$$

where

$$\gamma = \delta * \frac{(1-T)*(1-Te)}{(1-Td)}$$

By adding B to both sides in the above equation, we have the result:

$$Vg = Vu + B*(1-\gamma)$$

Appendix 2: UK effective corporation tax

Advance corporation tax (ACT)—an imputed 25% of any dividend payout, that is, ACT/(ACT + dividend) = 0.25—must be paid within 3 months of the dividend payout. Mainstream corporation tax [(35% of taxable earnings) minus (ACT)] must be paid within 9 months of the end of the accounting period. As an example, we suppose that a company makes an annual dividend payment. For the sake of simplicity, we might assume that the EBIT occur mid-way through the accounting period, at which time the dividend is paid. Suppose, also, that, in anticipation of corporation tax, the company invests in risk-free assets the amount necessary to meet its future tax liabilities. For each £1 earned, therefore, the company's

earnings after interest and tax (EAIT) are effectively:

$$EAIT = 1 - \frac{0.333*\text{dividend}}{(1+rb')^{0.25}}$$
$$- \frac{0.35 - 0.333*\text{dividend}}{(1+rb')^{1.25}} \quad (A)$$

where rb' $(=rb(1-T))$ represents the after-tax cost of borrowing.

The maximum dividend payable is EAIT, that is,

maximum dividend

$$= \frac{1 - 0.35/(1+rb')^{1.25}}{1 + 0.333*(1/(1+rb')^{0.25} - 1/(1+rb')^{1.25})}$$

For example, setting the after-tax cost of borrowing = 10%, the maximum dividend payable is 0.675; that is, an effective corporation tax of 32.5%. If the company makes no dividend payment, Equation (A) becomes:

$$EAIT = 1 - \frac{0.35}{(1+rb')^{1.25}}$$

which with the after-tax cost of borrowing = 10%, gives 0.69, that is, an effective corporation tax of 31%.

Averaging the two results suggests an effective corporation tax close to 32%.

Risk Analysis in Capital Budgeting Contexts: Simple or Sophisticated?

Simon S. M. Ho and Richard H. Pike*

Abstract—The aim of this paper is to report findings from a comprehensive UK survey which covered a wide range of risk handling issues in capital budgeting. The results provide a clear and up-to-date picture of the current practices of risk analysis within 146 large companies. In addition, the relationships between some risk analysis practices and other firm characteristics were explored. Their implications for theory and management, and some possible suggestions to bridge the gap between theory and practice, are discussed.

Introduction

A central theme in the literature on the valuation of assets in both capital market and capital budgeting contexts is the measurement of risk and its impact on values. The early capital budgeting literature (see Dean, 1951) either ignored the impact of risk and uncertainty or dealt with it in a largely intuitive manner. Subsequently, uncertainty was incorporated into the capital budgeting theoretical framework through the development of *ad hoc* rule-of-thumb risk adjustments based on utility considerations of risk aversion, mean-variance analysis (Markowitz, 1959), and a methodology for pricing risky assets (Sharpe, 1964; Lintner, 1965). The theoretical capital asset pricing framework was developed with financial investments in mind, and for a quarter of a century the academic community has wrestled with the task of extending and applying the framework to capital investment—as yet, with only limited success.

At the same time, the problem of handling risk on capital budgeting has grown. Uncertainty in the underlying economic environment has increased through the considerable instabilities in inflation levels and exchange rates following currency flotation. This is confirmed by Bierman's (1986) finding from a survey of US senior financial officers that the challenge of handling risk and uncertainty was one of the most prominent problems in capital budgeting practice.

Given the theoretical and practical importance attached to the subject it is perhaps surprising that relatively little empirical research has been conducted on how firms assess and handle risk in valuing assets. The existing information on risk handling practices, mostly collected and reported

as a part of broader-based capital budgeting surveys, inevitably provides only a limited view of risk analysis practice and its related problems. The purpose of this study is to provide a broader picture of the risk handling issues and to examine some of them in greater depth. In addition, the research also explored the relationships between the extent of use of risk analysis and a number of firm variables (i.e. rate of return, fixed asset size, gearing, volatility of sales, volatility of return, firm beta).

Empirical literature on risk handling practices

'Risk' in this study is used to denote that the decision maker is uncertain as to the precise outcomes of the investment decisions, which involve the possibility of undesirable consequence or loss. Unlike 'pure' or 'non-speculative' risk usually discussed in the field of safety management (where there is usually no element of speculation or potential gain, i.e. the potential outcomes are loss or no loss), managers and firms with entrepreneurial talent would take certain strategic (or speculative) risk in expectation of high returns. Unless otherwise specified, the term 'risk' in this paper refers mainly to 'strategic risk'.

In practice, risk handing methods fall broadly into two categories:

(1) *Simple risk-adjustment* methods based on deterministic estimations and intuitive adjustments to either the underlying cash flows or economic evaluation model (e.g. increasing the discount rate or reducing the payback criterion for higher-risk projects).

(2) *Probabilistic risk analysis* (PRA) techniques based on a comprehensive evaluation of the uncertainties associated with critical variables and their probabilities before any

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risk-return trade-off decision is made. Commonly-employed PRA techniques include sensitivity analysis, basic probability analysis, decision-tree analysis, Monte Carlo simulation, and capital asset pricing methods. This approach is more commonly known as 'risk analysis' in the literature.

Despite their apparent ease of use, SRA methods could lead decision makers to accept decisions against their original intentions if the assumptions were not clearly understood (Grayson, 1967; Davey, 1974; Hertz and Thomas, 1983a). In contrast, PRA conceptually requires rigorous analysis and provides more quantitative information about the risk inherent in a project. Some authors further assert that the greater the understanding of the precise nature and level of the risk the better the decision and, ultimately, the firm's performance (see e.g. Cooper and Chapman, 1987; Hertz and Thomas, 1984).

Some empirical support for this view is found in a number of successful application cases found in the literature (see e.g. Richards and Contesse, 1975; Hosseini, 1986; Cozzolino, 1979; Coats and Chesser, 1982; Hertz and Thomas, 1983b; and Karady, 1986). Collectively, these in-depth studies suggest that, for the firms concerned, management relies heavily on risk analysis techniques for evaluating complex strategic projects, and that corporate success can be partly attributed to the use of such approaches.

Following a proliferation of work in recent years advocating risk analysis, capital budgeting surveys indicate a gradual but definite transition from theory to practice (see e.g. Kim and Farragher, 1981; Gitman and Mercurio, 1982; Corr, 1983; Klammer and Walker, 1984; Scott and Petty, 1984; Gurnani, 1984; Pike, 1988b). In the US, for instance, Klammer and Walker (1984) reported a significant increase in use of at least one formal method for risk assessment of adjustment from 39% in 1975 to 59% of responding firms in 1980. More recently, an even greater increase occurred in the UK. Pike (1988b) reported that while 26% of the responding firms formally evaluated risk in 1975, the figure had increased for the very same firms to 86% by 1986.

Overall, these surveys indicate an increasing use of risk analysis techniques, but a predilection for simple risk-adjustment methods. However, the increasing availability of computer financial modelling packages has made it easier for firms to conduct sophisticated risk analysis in a more cost-effective manner (Pike, 1989).

One reason for the lack of widespread acceptance of risk analysis is that it is marred by some practical problems still to be resolved. For instance, Vandell and Stonich (1973) and Hall (1975) argue that the use of sophisticated evaluation techniques tends to make proposals more difficult to accept, reduce managers' enthusiasm to generate investment ideas, and thus lead to lower capital expenditures. These authors believe that managers should find ways of living with risks rather than analysing them. PRA is also marred by some inherent implementation problems which are difficult to overcome (see e.g. Hull, 1980).

Another possible explanation for the relatively low PRA usage rates is the concern in both the literature and business community as to its real 'bottom-line' impact. Until recently, the limited empirical research investigating the impact of capital budgeting sophistication (CBS) on firm performance have been mixed and inconclusive (Christy, 1966; Klammer, 1973; Kim, 1982; Schall et al., 1978; Pike, 1984; Haka et al., 1985), and few considered the risk aspect specifically. Recently, Ho and Pike (1989a), using an interrupted times series experimental design, also found no evidence that the adoption of probabilistic risk analysis led to a significant change in capital expenditure or corporate profitability within firms. This appears to conflict with numerous case studies mentioned above attributing, in part, corporate success to the adoption of PRA methods for major projects. Nevertheless, this at least lends no support to previous arguments that the use of PRA creates a 'disincentive' effect on capital investment.

The general support for formal risk analysis in the prescriptive literature contrasted with the relatively small number of firms employing it, together with the lack of agreement on its actual impact, suggest that this is a relevant and important subject for further investigation. The current study should provide a clear picture of the current practices of risk handling in capital budgeting among large UK firms.

Survey method and sample

Following extensive exploratory interviews with executives in ten organisations, a questionnaire was devised, pilot tested and revised. The questionnaire used mainly structured, multi-choice questions, some requiring more expansive responses. For most forced-choice questions, respondents were able to give other answers not listed in the question. Measurement of attitudinal and perceptual items used a 6-point Likert-type scale (see an abridged version of the instrument in the Appendix).

Questionnaires were distributed to named finance directors in the largest 350 companies in the Times 1000 (1987), defined by sales turnover. After two follow-ups, the whole process resulted in responses from 154 companies, 146 usable for this study (an actual response rate of 42.5 percent). Many respondents added additional comments and information to some of the questions in the

Table 1
Industrial Breakdown of Responding Firms

1st digit SIC code	Industry	Sample Number	Percentage
1	Energy and Oil	11	7.5
2	Mining and Manufacture of Metals, Mineral and Chemical Products	25	17.1
3	Engineering and Vehicles	41	28.1
4	Consumer and Other Manufacturing	33	22.6
5	Construction	9	6.2
6	Distribution and Trade	15	10.3
7, 8	Communication and Finance	12	8.2
	Total	146	100.0

questionnaire. Some attached documents relating to the risk handling practice in their firms. The relatively high rate of co-operation from respondents gives some indication of the significance attached to the area of risk assessment by senior managers.

Follow-up telephone and on-site interviews with selected respondents were carried out to seek further clarification on certain issues and obtain a more detailed picture of certain aspects of risk handling in the capital budgeting process. A number of tests were also conducted to establish the reliability and validity of the data obtained. First, the measures of three risk analysis variables from the last 40 questionnaires received were compared with the results of the first 40 in order to check for any possible bias. This technique indicated no significant difference (alpha = 0.05) between early and late responding firms, thus suggesting that non-response bias was minimal in the data collected. In addition, three financial variables (fixed asset, return on capital employed and gearing) were compared for 50 randomly selected responding companies and 50 randomly selected non-responding companies. The hypothesis of equal means for the two groups was not rejected regarding the three variables (alpha = 0.05), again suggesting that the respondents were representative of the original sample. The characteristics

of the sample firms presented in Tables 1–2 for industry and size also support this belief.

Lastly, as shown in Table 3, analysis of the titles of those responding to the questionnaire revealed that over 70% were senior executives (e.g. director of finance, controller, managing director) and over 20% were capital budgeting specialists (e.g. capital planning manager). It can be safely assumed that the respondents were fully conversant with the capital budgeting practices of their respective companies.

Results

Scope of Risk Analysis

Theory suggests that firms should differentiate between types of risks. Scope or level of risk analysis conducted within firms ranges from single project risk (i.e. the variability in the capital project's cash flows) to portfolio risk (i.e. the variability in a firm's or a shareholder's portfolio returns). At the project level, firms may analyse the risk of each project individually or collectively on a group or divisional basis. Potential dependencies between uncertainty factors should also be considered when project risk is measured. Several methods have been recommended to analyse the dependence of different uncertainty factors (Barnes et al., 1978; Hull, 1982). Although formal risk measurement of

Table 2
Fixed Assets Breakdown of Responding Firms

Size Group	Size of Fixed Assets (£)	Sample Number	Percentage
1	0–50 millions	56	38.4
2	50–200 millions	34	23.3
3	200–500 millions	26	17.8
4	over 500 millions	30	20.5
	Total	146	100.0

Table 3
Distribution of Respondent Titles

Title	Number	Sample Percentage
Director of finance	32	21.9
Chief accountant	28	19.2
Controller	25	17.1
Capital planning manager	16	11.0
Financial/Project analyst	7	4.8
Financial manager	7	4.8
Managing director	6	4.1
Treasurer	6	4.1
Director of corporate planning	6	4.1
General manager	2	1.4
Others/unknown	11	7.5
Total	146	100.0

financial/quantitative factors may assist in investment decision making, such analysis should be extended to embrace non-financial uncertainties before making a final decision. These factors may include, for example, uncertainties surrounding corporate goals, employee morale, environmental responsibility and company/industry image.

Even if individual risks are known, their combined effect should also be considered. The acceptance of a new project may change the overall risk of a company or diversified portfolio. Thus, risk can be analysed within a single project, division, total firm, or capital market context. It should be noted that, in the paper, the term 'risk' will be used to denote 'project risk' unless it is clear from the context that other denotation is intended.

These different aspects of risk analysis provide complementary perspectives and criteria for making investment decisions. Therefore, respondents were asked whether they accounted for each of the listed aspects of investment risk in their decision process. Table 4 reveals that managers most frequently assess the risk of each project or project class individually (79%). The second most popular response was the impact of non-financial uncertainties (67%), followed by the effect of project risk on corporate overall risk/return (60%). The analysis of relationships among different projects' returns (55%) and between various uncertainty factors (49%) was found to be lower in use in the sample firms. Only one quarter of the respondents analysed the effect of project risk on the shareholders' portfolios.

It was further found that 69% of firms analysed at least three of these aspects of risk analysis, the most popular combinations being the A–B–C (10.4%) and A–B–E (10.4%) (see Tables 4 and 5). Chi-square analyses conducted between each pair

Table 4
Scope of Risk Analysis
(Total Number of Responses: 142 Firms)

Aspects of Risk Analysis	Percentage of Total
A. Risk of each individual project/class	79.3
B. Impact of non-financial uncertainties	66.7
C. Effect of project risk on overall corporate risk/return	60.6
D. Relationships among the returns of different projects	55.3
E. Relationships among various uncertainty factors	46.5
F. Effect of project risk on shareholder's portfolio	25.7

Note: Total percentage exceeds 100 as many respondents chose more than one answer.

Table 5
Total Number of Risk Aspects Analysed

Number of Aspects Analysed	Number of Responses	Percentage of Total
None	18	13.0
1	9	6.5
2	16	11.6
3	40	29.0
4	16	11.6
5	20	14.5
6	19	13.8
	138	100.0

of risk analysis aspects suggest that firms conduct a variety of analyses at project risk and corporate risk level, with the shareholders' portfolio approach being somewhat neglected. Except 'relationship among various uncertainty factors' ($\chi^2 = 7.07$, $p = 0.006$), firm size group had little bearing on the scope of risk analysis within firms. However, industry sector was significantly related to 'relationship among uncertainty factors' (alpha = 0.05). The oil/energy sector has the highest proportion of firms which analyses this risk aspect (73%). Industry is also significantly associated with the total number of risk aspects analysed in firms, with the mining/chemical sector having the highest.

An aggregate measure of overall scope of risk analysis was used to determine its relationship with several other firm characteristics mentioned in the first section. For each aspect included in the risk evaluation process, one point was awarded on the 'index of scope'. Each firm was then assigned a score from one to six, based on the total number of aspects of risk analysis evaluated. The higher the score, the wider is the scope of risk analysis that the firm performs in the investment process. The

bivariate correlation analyses show that fixed asset size ($r = 0.18$), gearing ratio ($r = 0.22$), and firm beta ($r = 0.44$) were significantly correlated with the overall scope of risk analysis (alpha = 0.05).

Overall, these results suggest that companies are still more concerned with evaluating project risk than with focusing on portfolio risk. However, total project risk analysis could be considered to be a first step in risk analysis which is, in turn, always a prerequisite to the successful application of market portfolio risk analysis (Hull, 1980). Hertz and Thomas (1983a) stress the importance of using all different levels of risk analysis and having any conflicting results discussed among decision makers before reaching a decision outcome. Indeed, the need to develop flexible, multi-level, interactive decision processes using various risk perspectives becomes increasingly evident.

Project Risk Measurement Approaches and Techniques

Respondents were asked, on a 6-point frequency scale, to what extent they assess project risk by intuitive means, and, in addition, use each of the formal risk measurement techniques: sensitivity analysis (SA), probability analysis (PA), Hertz-type risk simulation (RS), and capital asset pricing model (CAPM). These risk measurement techniques, commonly described as 'risk analysis' in the literature, provide managers with a greater awareness of the risks associated with a project's return and enable them to make more effective risk-return trade-off decisions.

Table 6 shows, on a 6-point frequency scale ranging from 'Never' through 'Sometimes' to 'Very Often', the extent to which the various risk analysis techniques were used by sample firms. They are not mutually exclusive and many firms make use of a combination of methods. Respondents were also requested to list any other project risk measurement approaches they frequently employed. These included scenario modelling, EPS impact analysis,

Table 6
Risk Measurement Approach and Use of Techniques
(Total Number of Responses: 142 firms)

	Extent of Use (%)						
Approach and Technique	Never 1	Rare 2	Little 3	Some 4	Often 5	Very Often 6	Mean
1. Subjective/intuitive assessment (low, medium or high, etc.)	7.0	12.7	12.7	28.9	24.6	14.1	3.94
2. Sensitivity analysis	15.2	11.0	10.3	23.4	17.9	22.1	3.84
3. Probability analysis	49.0	10.5	10.5	13.3	9.8	7.0	2.46
4. Capital asset pricing model (beta analysis)	73.6	10.0	1.4	9.3	3.6	2.1	1.66
5. Risk simulation	78.0	8.5	5.0	5.7	2.8	0.0	1.47

breakeven analysis, profitability index analysis, and several enhanced versions of sensitivity analysis.

Subjective/intuitive evaluation of risk involved is regularly made ('sometimes' to 'very often') by 68% of respondents (39% 'often' or 'very often'), confirming Pike's (1988) finding, that most large UK firms have some 'informal' way of dealing with risk. Although the findings indicate that the majority of large firms assess risk explicitly, most firms only use single-point estimate methods of risk analysis. Among the four formal risk measurement techniques stated, sensitivity analysis was found to be the most commonly used technique, with 85% using it—the majority on a regular basis.

Since many respondents described 'risk' in terms of the probability/variability of outcomes during interviews, it is interesting to examine the extent to which such conceptions have stimulated management interest in the more complex probability-based techniques. Over 51% of the respondents claimed use of basic probability analysis methods which require probabilistic estimates of cash flows and associated mean-variability calculations, with 30% of respondents using them regularly. This indicates that the use of probability analysis has increased in recent years.

Other more advanced techniques, although highly developed in theory, have not been in widespread use in the capital budgeting process. Table 6 clearly shows that Hertz-type risk simulation and CAPM are, in the main, not used. In practice, as the interviews showed, the type of 'simulation' used by some firms is not necessarily the Hertz-type as described in existing literature (Hertz, 1968; Hertz and Thomas, 1983a). Firms simply develop financial models consisting of all the key variables, with a subsequent 'simulation' of the performance measures, subject to changes in a few key assumptions. Such an approach does not necessitate the assignment of probability distributions for the key variables, as proposed in the Hertz approach. Probability simulation and the CAPM technique are not new but their practical use is still in its infancy. The findings regarding the use of sophisticated risk measurement techniques are quite consistent with earlier studies (Gitman and Mercurio, 1982; Pike, 1988). There is, however, a clear continuing trend towards the adoption of such techniques. In particular, the usage for CAPM (26%) substantially exceeds that of any prior survey in the UK or US.

Chi-square analyses between the various risk measurement techniques and the risk analysis aspects (i.e. Table 4 with Table 6) indicate that sensitivity analysis is significantly associated with only two project level aspects, i.e. 'individual project risk' and 'relationship among uncertainty factors of a project' (alpha = 0.05). Probability analysis is significantly and positively related to

all risk analysis aspects except 'impact of non-financial uncertainties'; which may suggest the inherent difficulty in assigning probabilities to non-financial variables. As expected, CAPM is positively associated with shareholders' portfolio risk consideration.

As a result of differences in project type, approval levels (headquarters vs. divisions) and approval criteria, many companies are making use of multiple risk measurement approaches and techniques. Table 7 shows that over half (53.4%) of the sample firms use two or more of the formal techniques. The most popular combinations are sensitivity analysis and probability analysis (used by 20%), followed by all four techniques (used by 12%) and sensitivity analysis-probability analysis-risk simulation (used by 6%). In general, the majority of companies using simulation also employ probability and sensitivity analysis in the decision making process. For example, two firms visited for in-depth study used sensitivity analysis to identify key variables and subsequently used probability analysis of cash flows to find the best alternative. A simulation could then be conducted to build a risk profile and classify the project risk, if required.

In an effort to determine the extent to which firms use a variety of formal risk measurement techniques in their investment decision process, a series of bivariate correlation analyses was conducted (see Table 8). With the exception of 'sensitivity analysis' by 'CAPM' and 'probability analysis' by 'CAPM', the correlation measures were positively significant at the 0.05 level. This indicates that firms frequently employ several risk measurement techniques either on the same project or on different projects.

Chi-square analyses show that use of sensitivity analysis is significantly influenced by both size and industry, with larger firms and firms in the Oil/Energy sector using it most frequently (alpha = 0.05). In contrast, the Construction and Heavy Engineering sectors have a higher proportion of firms frequently ignoring or not explicitly assessing project risk. Interestingly, the Distribution sector uses CAPM more frequently than any other sectors, and in fact surpasses most sectors in its use of sensitivity analysis.

Bivariate correlations were also examined between the overall extent of use of risk analysis techniques and other firm characteristics. Again, an aggregate measure was used to reflect the overall usage. Sensitivity analysis, as a basic risk analysis tool, was assigned a weight of 1, while the more sophisticated techniques had a weight of 2. The overall score was calculated by summing up the extent to which each technique was used, multiplied by its assigned weight. Among all firm characteristics, correlation analysis results indicate that there were only positive significant relationships

Table 7
Total Number and Combinations of Risk Measurement Techniques
Used

Total Number of Techniques Used			Number of Responses	Percentage of Total
None			15	10.9
1			51	36.9
2	SA, PA	27	19.6	
	SA, RS	2	1.4	
	SA, CAPM	7	5.1	
			36	26.1
3	SA, PA, RS	9	6.5	
	SA, PA, CAPM	10	7.2	
			19	13.7
4	SA, PA, RS, CAPM		17	12.3
			138	100.0

Key:
    SA = Sensitivity Analysis
    PA = Probability Analysis
    RS = Risk Simulation
  CAPM = Capital Asset Pricing Model

(alpha = 0.05) between extent of risk analysis and (i) fixed asset size ($r = 0.38$) and (ii) firm beta ($r = 0.20$).

Risk Reduction and Control

Effective handling of risks requires their identification, measurement and subsequent incorporation in the project decision model. After the measurement of the investment risk, managers having a high concern for total risk need to judge whether some or all of the inherent risks should be avoided, reduced or tolerated before the risk-return trade-off decision is made. If the firm cannot tolerate some of the risks (particularly non-speculative risks), it would probably have to identify some methods to protect against unfavourable outcomes, from complete catastrophes to less serious occurrences.

Respondents were asked to identify the three primary methods that they use to reduce risk and uncertainty during both project implementation and operation, given a choice of seven risk reduction methods commonly described in the literature. They were also asked to indicate any other methods frequently used. Table 9 shows the percentage usage of each method.

The three most popular risk-reduction methods are 'maintaining tighter project control' (86%), 'diversifying the risk' (53%), and 'modifying policies and staffing within the company' (41%); 'subcontracting' and 'operating a contingency fund' are less common alternatives (31% and 24% respectively). As capital investments involve possibilities of both gains and losses and many man-agers are willing to take high risk when the expected returns are high, very few firms (8%), other than those in the Communication and Finance sectors, acquire commercial insurance policies to guard against potential loss. Other risk-reduction methods mentioned include conducting market research, phased approval/development, guaranteed supply agreement with customers, taskforce approach, obtaining 'expert' advice prior to implementation, and minimising 'upfront' commitment.

It is interesting to observe that while diversification of investment risk is well established in the financial literature (e.g. Myers, 1976) as a means of reducing risk for the firm, it was also seen by over

Table 8
Interrelationships Among Risk Measurement Techniques*

	SA	PA	RS	CAPM
SA	—			
PA	0.178	—		
	(0.017)			
RS	0.257	0.376	—	
	(0.001)	(0.000)		
CAPM	0.126	0.092	0.186	—
	(0.068)	(0.140)	(0.014)	

*Reported coefficients are Pearson product—moment correlations. Significance levels are in brackets.

Table 9
Risk Reduction and Control
(Total Number of Responses: 143)

Risk Reduction Method	Percentage of Total
1. Maintain tighter control of project implementation	86.4
2. Diversify the risk (e.g. joint venture)	53.0
3. Modify policies and staffing of the company	40.9
4. Subcontract critical parts of project	31.0
5. Operate a contingency fund in the event of need	23.5
6. Secure market via vertical integration	15.9
7. Acquire commercial insurance coverage	8.3

half of the sample firms as a primary risk reduction approach. Chi-square statistics indicate that industry sector is significantly related to the diversification of projects, with the Construction sector using the strategy most frequently (alpha = 0.05). This is not surprising due to the complex nature of their projects. The overall results indicate only a moderate preference for diversification strategy as a primary tool for risk reduction, confirming the American findings of Petty et al. (1975). Discussions with group executives indicated that there are other risks associated with becoming a diversified company, and some young companies are more preoccupied with growth than stable earnings.

Adjusting Risk for Project Decision

From both theoretical and intuitive perspectives, investors taking a greater risk should be compensated with greater returns, or alternatively, more stringent requirements should be placed on higher risk projects (e.g. shortening the payback period). Respondents were asked to rank the various risk adjustment techniques used, in descending order of usage frequency:

a. shorten required payback period (SPBP)
b. raise discount rate/required rate of return (RDIR)
c. adjust estimated cash flows subjectively (ACFS)
d. adjust estimated cash flows for cost of risk premium (ACFP)
e. use certainty equivalents of cash flows (CECF)

Theoretically, 'certainty equivalents' are attained by replacing each period's expected cash flow by the 'certain' cash flow that would be equivalent in value or utility. Responses to this question are summarised in Table 10. Almost all firms employ some formal methods to allow for or adjust differential risk (90%). RDIR is used most frequently (84%) and is seen to be of prime importance by 42%. This is closely followed by

SPBP, used by 83% (34% as the primary technique), even though, in theory, the approach is inferior to most other techniques. ACFS represents 69% of respondents (23% as the primary technique), followed by CECF with 56% (15% as the primary technique), and ACFP is the technique least frequently employed by the respondents with 50% (1.5% as the primary technique). SPBP is the most popular supplementary technique employed.

Very few firms use one technique exclusively. The use of two or more risk-adjusting techniques is very common (almost 83%), with 45% of firms using four or more methods. The most popular combinations of risk-adjusting techniques are RDIR–SPBP and RDIR–SPBP–ACFS. This may indicate that there is no single risk-adjustment technique sufficient for managers to determine an acceptable level of risk-taking. Other comments received from respondents revealed that firms tend to use multiple risk adjustment techniques since the criteria and approval level vary for different types of projects. For example, a firm may use SPBP at the divisional level, and ACFS at higher levels. Indeed, there may be a danger of reducing cash flows at one level and increasing the discount rate at a higher level, thereby biasing decision making against high risk investment. Whether this is the case is an interesting hypothesis to be developed and tested in further studies.

This study finds, on the whole, a much higher usage of RDIR and SPBP methods than previous studies. It also seems that the risk adjustment of discount rate is the most favoured technique in the UK, while risk adjustment of cash flow is adopted more by American managers (see e.g. Gitman and Mercurio, 1982). SPBP is far less popular in the US than in the UK. It is clear, however, that both the US and the UK continue to rely on more than one adjustment technique for investment decisions.

Although payback is not regarded as a prime measure of risk it is still a common practice to use

Table 10
Risk Adjustment for Project Evaluation
(Percentage of Firms Indicating Ranking of each Method)

Risk Adjustment Method Used	Mostly Frequently 1	2	3	Least Frequently 4	5	Total Used	Not Used	Exclusive Use
1. Raise discount rate/required rate of return	42.1	23.2	9.8	6.8	2.3	84.2	15.8	6.76
2. Shorten required payback period	33.8	25.6	14.5	5.3	3.8	83.5	17.3	3.00
3. Adjust estimated cash flows subjectively/intuitively	22.6	17.3	15.8	7.5	6.0	69.2	30.8	4.51
4. Use expected values or certainty equivalents of cash flows*	15.0	8.3	9.8	11.3	12.1	56.4	43.6	2.25
5. Adjust estimated cash flows for costs of risk premium	1.5	3.0	9.8	12.8	23.3	50.4	49.6	0.00

Note: 13 respondents did not indicate any adjustments. The percentages in this Table are based on 133 firms that stated they did adjust for risk, not on the total number of firms in the survey.
*These two techniques are not the same. 'Expected values' is based on probabilities, and 'certainty equivalents' on utility theory using risk/return trade-off. They are grouped together here to facilitate comparison with previous findings with similar categorisation.

SPBP to determine whether the risk is acceptable. The large number of firms using SPBP, either individually or with other techniques, is not surprising since it is easy to use and emphasises liquidity. Stateman and Sepe (1984) and Pike (1985) recently further suggest that as long as shareholder wealth maximisation is regarded by managers as of secondary importance, the payback method will continue to be used to benefit managers at the expense of the owners.

The most common reason given for the use of RDIR is that the method is realistic, more accurate, and consistent with their DCF evaluation framework. However, a question immediately arises as to the way in which the risk premium is determined within these firms. For example, do the risk premiums vary with the type or size of a project? Although adjustment of discount rate is desirable, estimating the adjustment correctly is equally important.

Although 112 firms claimed to use a risk-adjusted discount rate (56, extensively), only 28 also use the CAPM (12, extensively). Discussion with executives further revealed that firms employ different methods to determine the risk premium. Some simply add a risk premium to the market riskless rate, others rely on their recent earnings or growth performance, and a few use the CAPM to estimate the required discount rate. Nevertheless, although the CAPM is used to assist in determining their overall cost of capital, few firms use it to incorporate project risk. Two executives interviewed said that it is difficult to determine a meaningful project beta due to the unique nature of their projects. It seems that in a large proportion

of the firms, the size the discount rate adjustment should be is usually a matter of management judgement. It depends on experiences with other investments which might be considered similar to the one being produced, and the risk-taking attitude of the decision maker.

Furthermore, it has been argued that it is confusing to use discount rates both to reflect risk and the time value of money (Robichek and Myers, 1966). Some researchers advocate the use of certainty equivalents of cash flows (CECF) in order to overcome the difficulty of the RDIR method (Grayson, 1967). In practice, although over half of respondents claimed that they do use CECF, only a quarter use it regularly. There is also the question of whether managers really compute the 'certainty equivalent' return of an investment in the sophisticated, theoretical way as described in the financial textbooks or simply use some arbitrary assignments. As with utility function analysis, a major problem of CECF is obtaining the decision maker's objective function in order to get meaningful deflating factors. In practice, it is both easier, and more acceptable, to use expected values of cash flows than certainty equivalents to adjust for risk.

Further chi-square analyses indicated a significant positive relationship between RDIR and PA (p-value = 0.24), and between RDIR and CAPM (p-value = 0.005). This demonstrates that firms using probability analysis and CAPM frequently also tend to use risk adjustment of discount rate as a primary adjusting technique. Overall, the use of any risk adjustment method as a primary method is influenced by the extent to which project risk is formally measured.

The size analysis results indicated that company size has significant influence only on the selection of RDIR as a primary technique (p-value = 0.03). Interestingly, the smallest and the largest size groups tend to use RDIR less as a primary technique than the medium-size firms. The distribution shows that smaller firms tend to use SPBP and ACFS more frequently, which confirms Pike's (1988) finding. On an industry basis, the analysis indicates that the proportion of firms using SPBP significantly differs according to the industrial sectors (p-value = 0.04), the percentage of firms using it as a primary technique ranging from none in the Oil/Energy sector, to 60% in the Distribution sector. The distribution of SPBP suggests that firms with high product obsolescence tend to use SPBP more than other sectors. Apart from SPBP, industry sector has no strong influence on the use of other risk adjusting techniques. In short, the Oil/Energy and Construction sectors seem to prefer RDIR, while the Distribution and Capital Goods sectors favour SPBP, and the Finance/Communications sectors use both moderately.

Discussion and Conclusions

This paper has examined managers' preferences for handling risk and uncertainty within capital budgeting contexts, based on the authors' survey conducted in 146 larger-sized UK organisations. The main finding is that firms prefer relatively simple risk adjustment and sensitivity analysis with a primary focus mainly on 'total' project risk. While probability analysis has increased in use, advanced risk analysis techniques, such as risk simulation, covariance analysis and CAPM, although well developed in the literature, are still in an experimental stage in practice. The typical pattern of risk handling involves a single value estimate of risk-adjusted IRR, alongside a payback calculation as a rough indication of risk, combined with management judgement based on experience and intuition. The results also suggest that firms with higher market risk and/or larger asset size in general, as well as certain industries in particular, are more actively involved in utilising advanced risk analysis tools.

Nevertheless, simple approaches tend not to be replaced by the more advanced ones, but are used to supplement analysis. Many firms have assembled a package of risk analysis tools to assist in making strategic capital budgeting decisions. Furthermore, over half of the respondents surveyed expect formal risk analysis to become more important over the next few years. The growth in computerised decision support systems and an increasing awareness of concepts underlying formal risk analysis techniques, would support this belief.

Recently, there are debates on whether decisions on advanced manufacturing technology (AMT) can be based on quantitative financial techniques or should be made primarily on strategic grounds. In a recent survey, Pike *et al.* (1989) found that over half the firms surveyed reported problems in assessing the benefits of ATM investment. Responding companies appeared to handle such problems by enhancing the importance of the proposal's degree of fit with business strategy and sensitivity to changes in key assumptions. The preference for simpler risk handling techniques, reported in this paper, would, therefore, also appear to apply to AMT investment projects. The views has been expressed (e.g. Hayes and Farvin, 1982) that sophisticated investment appraisal techniques are not suited to the evaluation of ATM investment proposals, and may even be a major stumbling block to such investment. We, however, would support the view expressed by Finnie (1988) that the problems identified in appraising AMT proposals are more likely to arise from shortcomings in the management of the investment appraisal process within organisations than from the financial evaluation itself.

We also agree with Kaplan's (1986) view that rather than abandoning the use of sophisticated financial evaluation methods for computer-integrated manufacturing (CIM), executives should find ways to apply the methods more appropriately and to recognise the special attributes of AMT and CIM. Furthermore, the possible over-estimation of the risk premium in assessing risk-adjusted discount rates in AMT projects does give cause for concern (Kaplan, 1986), particularly in the light of the far lower rates employed within Japanese firms and their consensus approach to handling risk and uncertainty (Hodder, 1986). Anyhow, AMT investment decision is clearly an important topic to be explored further in future studies.

One important contribution of this study is the substantial descriptive evidence provided on the current risk handling practices in larger UK firms. These findings may encourage executives to re-evaluate and improve their own risk handling practice in the light of the revealed practices and problems of others. Given the wealth of theoretical literature relative to risk analysis and the absence of information describing the real world practice and impacts, the study offers a more comprehensive empirical base to future research in the field.

These findings also provide research insights into several important aspects of risk handling. Future related research which the authors believe to be worthy of further investigations include (i) identifying the barriers and benefits to sophisticated risk analysis techniques, (ii) the extent to which the methods of forecasting and quality of information affect risk analysis effectiveness, and (iii) whether adoption of probabilistic risk analysis methods has any impact on corporate performance.

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Appendix. Abridged research questionnaire

1. Please briefly describe what you understand by the terms 'risk' and 'uncertainty' of a capital investment project.

2. Does your company account for

	Yes	No
(a) the impact of non-financial uncertainties?	1	2
(b) the risk of each project individually?	1	2
(c) the effect of the project risk on corporate overall profitability?	1	2
(d) the effect of the project risk on shareholders' portfolio?	1	2
(e) the relationships among various uncertainty factors?	1	2
(f) the relationship among the returns of different projects?	1	2

3. How does your company analyse and assess the project risk in capital investment decisions? (Please indicate the extent of usage of each approach by circling one number in each row.)

Risk is:	Never	Rare	Little	Some	Often	Very Often
(a) assessed subjectively as low, medium, high, etc.	1	2	3	4	5	6
(b) analysed via 'what-if' sensitivity analysis by giving a % change to each key factor one at a time [used since 19____]	1	2	3	4	5	6
(c) analysed by giving probability distributions of net cash flow for each period and producing expected value of NPV [used since 19____]	1	2	3	4	5	6
(d) analysed via Monte Carlo-type probabilistic simulation [used since 19____]	1	2	3	4	5	6
(e) analysed via Capital Asset Pricing Model.	1	2	3	4	5	6
(f) Other approaches frequently used:						

4. How are project returns adjusted for risk and uncertainty? (Please rank all applicable methods, 1 = most frequently used.)

_____ shorten required payback period
_____ raise discount rate/required rate of return
_____ adjust estimated cash flows subjectively
_____ adjust estimated cash flows for costs of risk premiums (e.g. insurance)
_____ use certainty equivalents of cash flows

5. How does your company deal with/reduce the project risk to reduce unfavourable outcomes? (Please circle three most applicable responses.)

1. modify policies and staffing of the company
2. acquire commercial insurance coverage
3. diversify the risk (e.g. joint ventures)
4. subcontract critical parts of the project to outside contractors
5. secure material supply and/or product market via vertical integration
6. operate a contingency fund in the event of need
7. maintain tighter control of the project implementation
8. others (specify)

Corporate Mergers and Shareholder Wealth Effects: 1977–1986

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Abstract—The paper investigates the distribution of returns to shareholders of UK companies involved in acquisitions during the period 1977–1986. Three control models were used in the analysis: the market model with parameters identified through OLS regression, a model based on adjusted betas, and finally an index-relative model. Abnormal returns were identified around both bid announcement and outcome dates for bidders and targets in completed and abandoned bids. Examination was also made of the distribution of wealth changes for bidders and targets separately and for both in combination. The results demonstrate that, although there is no net wealth decrease to shareholders in total as a result of takeover activity, shareholders of bidder firms do suffer wealth decreases. By contrast, shareholders in target firms obtained significant, positive wealth increases in both completed and abandoned bids.

Introduction

Neo-classical economic theory assumes that corporate management acts to maximise the wealth of shareholders. Takeovers are seen as devices by which inefficient management teams may be replaced (Manne, 1965) and which facilitate the redeployment of capital to more efficient, i.e. 'profitable' users (Williamson, 1970; Weston, 1970). It follows, therefore, that if management pursues policies of shareholder wealth maximisation then shareholders should not suffer wealth decreases as a result of their company acquiring other companies. Additionally, in a competitive acquisitions market, competition amongst potential acquirers will raise the price to be paid for the target until the acquiring firm obtains no excess rate of return (Mandelker, 1974). In such a market the acquisition of one company by another may, therefore, be viewed as a zero net present value investment decision.

Studies which have addressed the question of the efficiency of the takeover mechanism as a device for controlling the actions of management have tended to fall into two groups. Early studies focused on the profitability and other financial characteristics of the companies involved and drew inferences about their relative efficiency (for

example Singh, 1971; Meeks, 1977). Accounting-based studies have been criticised on a number of grounds, including the downward bias introduced to post-merger measures of profitability (Appleyard, 1981) and the lack of adjustment for any consequent change in the risk profile of the acquiring firm (Weston et al., 1988, p. 793). The second group of studies have evaluated the impact of acquisition activity on the wealth of the shareholder groups involved by examining security returns around and within the period in which the acquisition occurs.

While there is a wealth of evidence from US studies to support the contention that acquisitions are value-creating activities for shareholders (see Jensen and Ruback, 1983; and Jarrel et al., 1988 for a review of the evidence), evidence on acquisition activity in the UK is less plentiful and the conclusions are ambiguous. The primary aim of the current paper is to provide further evidence on the impact of acquisition activity on the wealth of shareholders by an analysis of those takeover bids involving UK quoted companies which were initiated during the period 1 January 1977 to 31 December 1986. The study examines security returns and wealth changes to shareholders both for those bids which were completed ('successful' bids) and for those bids which were abandoned ('unsuccessful' bids). Evidence is provided on the efficiency of the market for corporate control in the UK. Whereas previous studies of UK acquisition activity have focused on the bid announcement date, the current study provides an analysis of returns around both bid and outcome announcement dates. It is suggested that the latter practice captures more completely the wealth changes arising from acquisition activity (Asquith, 1983).

Previous studies

In a study of UK mergers in the brewing and distilling industry over the period 1955–72, Franks, Broyles and Hecht (1977) found net gains to shareholders in the companies involved, although most of the gains appeared to accrue to the shareholders of target companies. Their conclusions suggest no significant loss to shareholders of acquiring companies. By contrast, studies by Firth (1979, 1980) of mergers involving a larger sample of UK quoted companies over the period 1969–75 found that gains obtained by shareholders of target companies were more than offset by losses to shareholders of acquiring firms. In the case of completed bids Firth also reported a post-merger adjusted loss to shareholders of acquiring companies. In studies involving relatively small samples of companies, Barnes (1984) and Dodds and Quek (1985) found negative adjusted returns for acquiring companies following the announcement of the bid. By contrast to the above, in a recent comprehensive study of UK mergers undertaken over the period 1955–85, Franks and Harris (1989) report positive adjusted returns to shareholders of both acquiring and acquired firms over a six month period commencing four months before the bid announcement, but also provide evidence of subsequent post-merger losses to shareholders of bidding firms. In summary, previous studies of UK merger activity disagree as to whether the returns to shareholders of bidding firms are zero or negative and whether there is an overall wealth increase or decrease arising from acquisition activity.

The next two sections describe the data and methodology used in the current study before presenting the results. Reported results include the return to shareholders of target and bidder companies in both completed and abandoned bids. In addition, the wealth gain (or loss) to each group of shareholders is calculated, together with the combined net effect on shareholder wealth for a sub-sample of completed bids.

Data

The data examined in the current study were drawn from the set of all bids announced within the period 1 January 1977 to 31 December 1986 involving companies quoted on the International Stock Exchange, London (ISE). Data requirements placed the following additional constraints on the companies to be examined:

(i) the bid outcome was announced by 31 December 1986;

(ii) the company had to be listed on the London Share Price Database (LSPD) throughout the periods prior to and during the bid;

(iii) daily share price data was available, either from Datastream or newspaper sources, for the period surrounding the bid and outcome announcement days.

Examination was made of the relevant pages in the *Financial Times*[1] over the whole period 1 January 1977 to 31 December 1986 to identify the date of formal announcement of each bid. The progress of the bid was then monitored in order to identify the outcome, i.e. whether completed or abandoned, and the date on which the outcome was announced. Bids in which the offer price was subsequently raised have been treated as one single bid.

Table 1 provides details of the impact of the above constraints on sample size and characteristics. In general, lack of data led to the elimination of smaller companies. In addition the use of the adjusted beta control model was restricted to those bids which were initiated from January 1979 onwards, as the Risk Measurement Service was not available before that date. Results reported throughout the paper are for those companies for which data was available for the period from six months prior to the bid month through to the end of the outcome month. However analysis was also undertaken on the full data set available for each sub-period without revealing any significant difference from the published results. In order to include a company in that part of the analysis involving the market model, an additional constraint was placed, namely that observations were to be available for at least 40 months of the pre-bid estimation period. In order to minimise 'survivor' bias no constraint was placed on the number of months for which bidder companies' returns were available following the outcome of the bid. The result of this latter condition was that returns for bids with outcome dates after 31 December 1985[2] were not recorded for the full 24 month post-outcome period. Throughout the remainder of the paper results are reported only for the application of the adjusted beta control model unless significantly different results were obtained using either of the other models.

The full data set was sub-divided into two groups, according to whether the bid was completed or abandoned. A bid was identified as abandoned if no further bid was made by the original bidder within six months following the abandonment date. The equity market value for each bidding and target company in the sample was identified as at the beginning of the month six months prior to the month of formal announcement of the bid.

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[1] Alternative newspaper sources were consulted when the *Financial Times* was unavailable for any period.

[2] Monthly data was available only to 31 December 1987.

Table 1
Impact of data constraints on sample sets used with adjusted betas control model

	Bidders		Targets	
	N	Average Size (£M)	N	Average Size (£M)
Bids identified	1284	—	1284	—
Post-1986 outcome	23		23	
	1261		1261	
No data	460		177	
	801	234	1084	43
No RMS betas	235		282	
Pre-bid data	566	270	802	49
No daily data	29		207	
Bid-outcome data	537	271	595	56
Partial data sets	8		43	
Final data sets	529	275	552	59

Composition of Final Data Sets

	N	Average Size (£M)	N	Average Size (£M)
Completed bids	448	273	462	49
Abandoned bids	81	286	90	106

Following Asquith (1983) the study is concerned with security returns around two event dates; the 'announcement date' and the 'outcome date'. The announcement date is here identified as the day identified in the *Financial Times*. Similarly the outcome date is the first day on which the bid was described in the *Financial Times* as unconditional in the case of completed bids, or as lapsed or withdrawn in the case of abandoned bids.

The analysis of security price changes around the two event dates provides evidence of stock market reaction to partially anticipated events (see Malatesta *et al.*, 1985). The bid outcome, the partially anticipated event, is known with certainty in relatively few bids at the bid announcement date. The disclosure of new information concerning the bid will relate both to the likely stream of benefits to shareholder groups and the probability of these being obtained, i.e. the likelihood of the bid succeeding. As the likelihood of the bid succeeding changes, an efficient securities market will adjust share prices accordingly. Examination of security price changes between the two event dates reflects the market's perception of the result of the bid.

Methodology

In order to assess the impact of mergers on security prices, abnormal returns have been identified using three control methods. The first control model, the Market Model developed by Fama, Fisher, Jensen and Roll (1969), was applied in the form:

$$\log_e(1 + R_{j,t}) = \alpha_j + \beta_j \log_e(1 + R_{m,t}) + U_{j,t} \quad (1)$$

where

$R_{j,t}$ = return on security$_j$ period$_t$
$R_{m,t}$ = return on the market for period$_t$
α_j, β_j are parameters for security$_j$
and $U_{j,t}$ is the residual error term

In order to estimate the parameters for each security, monthly share price returns data were collected for the period month -67 through to month -7, where month 0 represents the month of announcement of the bid. The period from month -6 to month -1 was excluded because prior UK studies had commented that the pattern of residuals for bidding companies suggests that 'the market is beginning to anticipate mergers on average at least 3 months prior to the announcement date' (Franks *et al.*, 1977). Inclusion of this period would therefore have been a source of potential bias in parameter estimation. Contemporaneous returns on the FT All Share Index were collected in order to provide a proxy for the returns on the market.

One possible criticism of the use of the pre-bid period for identification of the market model parameters is that the characteristics of bidders'

security returns may change as a result of the bid. Post-outcome returns would reflect these changes and bias the results. Another serious problem arises, however, as a consequence of the fact that many securities quoted on the ISE are traded infrequently. This 'thinness of trade' means that data provided in the LSPD tapes do not all represent end-of-month transactions. One consequence of infrequent trading is that the alphas and betas calculated on the basis of the above OLS regressions may be mis-specified.

Available evidence for the UK suggests that the share prices of many quoted companies exhibit the characteristics of infrequently traded securities. In particular, OLS estimates of the market model parameters for thinly-traded securities are likely to produce an overstatement of alpha values and a corresponding understatement of beta values (see Dimson, 1979). Results of the regressions undertaken to identify market model coefficients suggest that these characteristics are also present in the merger data set. The mean alpha values for all bidder companies in the sample was found to be 0.006, while the mean beta value was 0.86. For all target companies the mean alpha value was found to be 0.002 while the mean beta was 0.71. Because of this problem, the validity of results obtained using OLS estimates of market model parameters must be questioned. The current study incorporates results obtained using this control model, however, in order to provide a basis for comparison with previous studies and the other control models adopted.

A number of procedures have been devised for correcting the thin-trading bias (Scholes and Williams, 1977; Dimson, 1979; Cohen et al., 1983). Application of these procedures in studies involving daily data (see Brown and Warner, 1985; and Dyckman, Philbrick and Stephan, 1984) suggests that while the procedures reduce the bias in OLS estimates of beta they lead to no improvement in the power of event study tests.

In order to test for possible bias in the results, the analysis was repeated using the adjusted betas supplied by the London Business School Risk Measurement Service (RMS). RMS betas are estimated on the basis of regressing trade-to-trade security returns on the market returns observed over identical periods of time. The betas so calculated are then Bayesian-adjusted following Vasicek (1973). (The method is described more fully in Dimson and Marsh, 1979; and Marsh, 1980.) The RMS provide a readily available source of adjusted betas which have been found to be superior to those obtained using other methods (see Dimson, 1979). Accordingly, beta values were obtained from the Risk Measurement Service for a date approximately six months prior to the bid

announcement month.[3] Alpha values to correspond with the relevant RMS betas were estimated as follows:

Let Rj be the mean return of firm j over the market model estimation period, and Rm be the mean market return over the same period. Then

$$\hat{\alpha}_{j,\text{RMS}} = \bar{R}_j - \hat{\beta}_{j,\text{RMS}} \bar{R}_m \qquad (2)$$

where

$$\beta_{j,\text{RMS}} = \text{the RMS } \beta$$

and

$$\alpha_{j,\text{RMS}} = \text{the estimated } \alpha \text{ value}$$

The relevant RMS alphas and betas averaged 0.005 and 0.96 respectively for bidder companies and -0.002 and 0.90 for target companies.

Abnormal returns were then calculated for all relevant periods using the RMS beta values and estimated alpha values.[4] As the RMS did not commence until 1979, this necessarily involved a reduction in sample size.

For the third control model, residuals were calculated using an Index Model, that is by assuming an alpha of zero and beta of one for all securities, i.e.

$$\log_e(1 + R_{j,t}) = \log_e(1 + R_{m,t}) + U_{j,t} \qquad (3)$$

In order to provide continuity of results and comparability with previous studies of UK data the results are reported in four stages:

(a) pre-announcement,
(b) announcement to outcome,
(c) post-outcome,
(d) overall.

Abnormal returns are reported only for those companies for which a complete set of data was available from month -6 through to the outcome month. An analysis of abnormal returns for data sets available for sub-periods confirmed that, while the above constraint reduced the reported number of observations, it had no significant impact on the results obtained. Analysis was extended for all bidders and for targets in abandoned bids for a period of up to 24 months following the end of the outcome announcement month. The periods for which analysis was undertaken are illustrated in Figures 1 and 2.

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[3] As the Risk Measurement Service is provided quarterly the beta values were collected over a period from 7.5 to 4.5 months prior to the bid announcement.

[4] Returns obtained using the Adjusted Betas control model were revised to incorporate the estimated alpha values following a suggestion made by one of the referees. The returns subsequently obtained, however, were not significantly different from those reported in earlier drafts of the paper which had assumed an alpha value of zero for all securities.

Figure 1
Sub-periods included in the analysis

Estimation Period	Month -67[a] to Month -7[a] ↕
Pre-Bid Period	Month -6[a] to Month -1[a] ↕
Bid Period (see Figure 2)	Bid month to Outcome Month ↕
Post-Outcome Period	Month $+1$[b] to Month $+24$[b] ↕
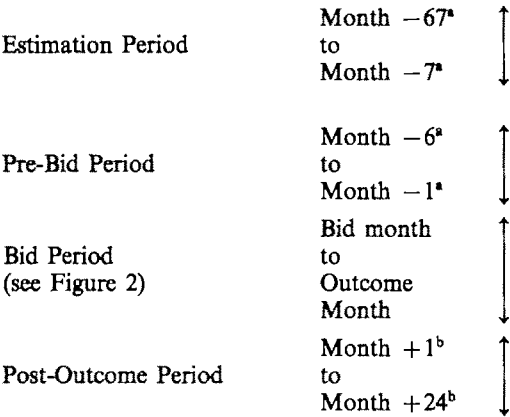
[a] Relative to bid month
[b] Relative to outcome month

(a) Pre-announcement

Using each of the models identified in equations (4) to (6) below, monthly abnormal returns $(AR_{j,t})$ were first identified for each company over the period -6 through -1 where month 0 corresponds to the bid announcement month.

Model 1: OLS Market Model

$$A_{j,t} = \log_e(1 + R_{j,t})$$
$$- [\alpha_{j,\text{OLS}} + \beta_{j,\text{OLS}} \log_e(1 + R_{m,t})] \quad (4)$$

Model 2: Adjusted Beta Model

$$AR_{j,t} = \log_e(1 + R_{j,t})$$
$$- [\alpha_{j,\text{RMS}} + \beta_{j,\text{RMS}} \log_e(1 + R_{m,t})] \quad (5)$$

Model 3: Index Model

$$A_{j,t} = \log_e(1 + R_{j,t}) - \log_e(1 + R_{m,t}) \quad (6)$$

The abnormal returns (residual effect) for each security are averaged over each month prior to the announcement month:

$$\overline{AR_t} = \frac{1}{N} \sum_{j=1}^{N} AR_{j,t} \quad (7)$$

where N is the number of securities in month t.

The average abnormal returns (residuals) are then cumulated to identify the Cumulative Abnormal Return (CAR) over the reported period:

$$CAR_t = \sum_{t=1}^{t=N} \overline{AR_t} \quad (8)$$

As an alternative to the calculation of Cumulative Abnormal Returns (CAR), a number of studies

have identified an Abnormal Performance Index (API) where:

$$\text{API}_t = \frac{1}{N} \sum_{j=1}^{j=N} \prod_{t=1}^{t=6} (1 + \overline{A_{j,t}}) \quad (9)$$

While the CAR measure represents the abnormal return on a portfolio which is rebalanced every period to give equal weighting to each security, the API identifies the abnormal return from investing an equal amount in each security at the beginning of the period but without subsequent rebalancing.

Value Weighted Returns (VWR) were calculated to represent the return which would be obtained by an investor in a value-weighted portfolio of companies. Weights were identified by reference to the total equity market value of each company six months prior to the bid, that is:

$$\text{VWR}_j = \text{MV}_{j,t}\left[\left(\prod_{t=-6}^{t=-1} (1 + A_{j,t})\right) - 1\right] \quad (10)$$

and

$$\overline{\text{VWR}} = \sum_{j=1}^{j=N} \frac{\text{VWR}_j}{\overline{\text{MV}_{t-6}}} \quad (11)$$

where $\overline{\text{MV}_{t-6}}$ is the mean size at $t - 6$.

The statistical significance of the results is assessed after calculating standard errors of the mean.

The results for bidding and target companies in completed and abandoned bids are tabulated in Table 2. Reported results include standard errors, together with the proportion of observations that were positive.

(b) Announcement to outcome

Abnormal returns were calculated for bidding and target companies over each of the following periods separately:

(i) From the end of month prior to bid announcement up to and including the announcement date (pre-bid period).

(ii) The day following bid announcement to the day preceding the outcome announcement (post-bid period).

(iii) The outcome announcement day to the end of month in which the outcome was announced (post-outcome period).

(iv) From the end of the month prior to the bid announcement date to the end of the month in which the outcome was announced (bid period).

Inclusion of the identified announcement day in period (i) above, and outcome date in period (iii), ensures that period (ii) encompasses the period of 'uncertainty' concerning the bid outcome. The above periods are illustrated by means of the diagram in Figure 2.

Table 2
Abnormal returns for the period prior to the bid announcement month for bids undertaken during the years 1977–1986. Results reported using adjusted betas

| Month | Bidders | | Targets | |
	(i) Completed Bids	(ii) Abandoned Bids	(iii) Completed Bids	(iv) Abandoned Bids
	%	%	%	%
−6	1.27**	2.11*	0.41	−1.31
	(0.48, 53)	(1.04, 59)	(0.47, 58)	(1.06, 48)
−5	1.37**	1.61	0.78	0.12
	(0.52, 52)	(1.30, 53)	(0.50, 59)	(1.17, 49)
−4	0.32	1.69	−0.28	0.23
	(0.51, 49)	(1.25, 51)	(0.48, 54)	(1.22, 57)
−3	0.66	1.55	0.41	1.39
	(0.49, 47)	(1.35, 52)	(0.47, 53)	(1.26, 63)
−2	2.70***	2.14**	1.71***	0.58
	(0.64, 57)	(1.00, 57)	(0.55, 64)	(1.11, 58)
−1	0.22	−0.59	3.64***	5.40***
	(0.48, 48)	(1.27, 51)	(0.66, 68)	(1.83, 66)
Cumulative Months −6 to −1				
CAR (%)	6.53***	8.51***	6.67***	6.41**
	(1.23, 58)	(2.59, 65)	(1.48, 60)	(3.03, 63)
API	1.06***	1.08***	1.08***	1.06**
	(0.01, 55)	(0.03, 56)	(0.02, 58)	(0.03, 61)
Value Weighted (%)	−0.18	10.40**	15.31**	5.20
	(2.35, 55)	(4.06, 56)	(7.50, 58)	(5.73, 59)
Size (£ Millions)	273	286	49	106
Observations	448	81	462	90

Note: Figures in parentheses represent standard errors followed by percentage positive.
  *Indicates significant at 10% level.
  **Indicates significant at 5% level.
  ***Indicates significant at 1% level.

(c) Post-outcome

Monthly abnormal returns were calculated for bidding companies for the 24 month period follow-

Figure 2
Time diagram identifying the relevant sub-periods within the bid-outcome period

D_1 = beginning of announcement month
D_A = bid announcement day
D_o = outcome announcement day
D_{end} = end of outcome month

ing the outcome month, month 0, (or until data were no longer available if earlier). As monthly data were available only to 31 December 1987, the results reported in this section do not include full data for bids announced in 1986. Summarised results are reported in Table 4 for bidders in both completed and abandoned bids. Post-outcome abnormal returns for targets in abandoned bids are also reported in Table 4.

(d) Overall

One of the problems in calculating the overall returns to companies involved in takeover bids is to identify the period over which share prices are affected by the bid. In their recent study Franks and Harris (1989) identify returns initially over a period of six months beginning four months prior to the month in which they first identify a

Table 3
Abnormal returns for the period from the beginning of the bid month to the end of the outcome announcement month for bids undertaken during the years 1977–1986. Results reported using adjusted betas

Month	Bidders		Targets	
	(i) Completed Bids	(ii) Abandoned Bids	(iii) Completed Bids	(iv) Abandoned Bids
	%	%	%	%
Pre-bid[1]	0.08	−0.55	24.29***	23.87***
	(0.49, 57)	(1.06, 41)	(1.26, 87)	(3.26, 83)
Post-bid	−0.00	−3.99**	6.16***	−3.29
	(0.72, 45)	(1.58, 39)	(0.92, 57)	(2.16, 33)
Post-outcome[2]	0.15	−1.28*	−0.14	−0.30
	(0.45, 41)	(0.69, 31)	(0.27, 41)	(9.60, 39)
Bid period	−0.20	−6.02***	31.38***	19.87***
	(0.93, 46)	(1.81, 28)	(1.64, 85)	(4.26, 70)
Value-weighted overall	−2.55*	−5.40*	32.98***	10.06
	(1.33, 46)	(3.15, 24)	(4.94, 85)	(6.44, 69)

Note: Figures in parentheses represent standard errors followed by percentage positive.
[1]Includes announcement day.
[2]Includes outcome day.
*Indicates significant at 10% level.
**Indicates significant at 5% level.
***Indicates significant at 1% level.

bid.[5] It is not clear, however, that returns to bidder companies prior to the formal bid antici-pate the bid announcement rather than reflecting other information concerning the bidder. Overall returns to bidder companies are, therefore, re-ported using as a base month the date of the formal announcement of the bid. For target com-panies the behaviour of pre-bid returns may be more readily identified as reflecting investors' ex-pectations of the likelihood of a bid. Returns to shareholders of target companies were therefore measured over the period beginning three months prior to formal announcement of the bid. Ad-ditional tests were also conducted for targets using a base date six months prior to the bid month, but without significantly affecting the results. Sum-marised results for the overall period of analysis are reported for bidders in Table 5 and for targets in Table 6.

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[5]Four key months are identified by Franks and Harris including the first approach date, first bid date, unconditional date, or date of removal from LSPD tapes. For around 73% of the bids, the appropriate key date was the date of the first formal merger offer, the date that coincided with that used in the current study.

Analysis of results

(a) Pre-bid

Bidder Companies. As reported in Table 2, bid-der companies obtain significantly positive abnor-mal returns in the months immediately preceding formal announcement of the bid. As the results obtained were not sensitive to the choice of con-trol model, reporting is restricted to the results obtained from application of the adjusted betas model, i.e. model 2 from equation (5). The returns obtained by bidders were also found to be inde-pendent of the ultimate outcome of the bid. The results are contrary to those reported by Firth (1980) who identified 'no significant abnormal security price behaviour associated with bidding firm', but they are consistent with those reported by Franks, Broyles and Hecht (1977). Value-weighted returns were significantly lower than equally weighted returns for bidders in completed bids, indicating that larger bidders on average earned a lower pre-bid abnormal return than smaller bidders.

In an analysis of the characteristics of companies involved in abandoned takeover bids over the period 1965–75, Pickering (1983) found that bids

Table 4
Abnormal returns for the 24 months following outcome announcement month for bids undertaken during the years 1977–1986. Results reported using adjusted betas

| | Bidders | | Targets |
	(i) Completed Bids	*(ii)* Abandoned Bids	*(iii)* Abandoned Bids
	%	%	%
CAR			
Month 1–12	−1.47	−10.10***	5.16
	(1.77, 51)	(3.45, 33)	(5.51, 49)
Month 13–24	−3.00*	−10.13**	−2.48
	(1.66, 48)	(3.92, 29)	(3.81, 42)
Month 1–24	−4.47**	−20.23***	2.68
	(2.24, 49)	(5.66, 30)	(7.05, 44)
Value-weighted			
Month 1–12	2.60	−3.10	−7.24
	(13.5, 46)	(24.8, 29)	(5.24, 44)
Month 13–24	−2.40	−0.30	−12.29**
	(16.2, 39)	(25.1, 30)	(5.04, 40)
Month 1–24	0.80	−4.30	−17.00**
	(14.9, 44)	(25.2, 30)	(8.28, 38)

Note: Figures in parentheses represent standard errors followed by percentage positive.
   *Indicates significant at 10% level.
  **Indicates significant at 5% level.
 ***Indicates significant at 1% level.

were made by both very strong and very weak companies. In the current study, the variation of pre-announcement returns obtained by bidders in abandoned bids (Table 2) is greater than that for completed bids. However, the difference in abnormal returns obtained by the two groups of bidders was not found to be statistically significant. It was not possible to infer from this analysis that bidders in abandoned bids were 'weaker' than those in completed bids.

There are at least two possible explanations for the positive abnormal returns for bidder firms in the pre-bid period. The first is that news of the bid is leaked to the market prior to the date of formal announcement. However, this explanation is only plausible if news of the bid is, on average, perceived positively, with the expected gains from completed bids outweighing the potential loss on abandoned bids. Further support for this explanation would therefore be available if, following bid announcement, bidders in completed bids obtained positive abnormal returns while bidders in abandoned bids obtained negative abnormal returns (see Table 3 in the next section).

The second possible explanation for the pre-bid abnormal return is that companies undertake acquisitions during a period of relatively good performance. Although some support is available for

the first explanation in that merger talks are often initiated some weeks prior to the formal announcement of the bid, it is unlikely that this completely explains the consistent pattern of positive pre-announcement abnormal returns. Acceptance of the second of the above explanations, however, provides tentative support for the hypothesis that takeovers involve a reallocation of resources to the more profitables firms.

Target Companies. Target companies also achieve significantly positive abnormal returns prior to the formal announcement of the bid, as reported in Table 2, columns (iii) and (iv). In addition value-weighted returns for targets in completed bids were higher than the unweighted returns. Significantly positive abnormal returns are obtained by target companies over a period beginning two to three months prior to formal announcement of the bid. This result again conflicts with the earlier finding of Firth (1980) who reported no evidence of 'successful anticipation of, or leaking of, the bid announcement' for a period up to and including two months prior to the bid announcement. The results are, however, consistent with those obtained by Franks *et al.* (1977) who suggested that the stock market 'is beginning to anticipate mergers on average at least 3 months prior to the announcement date'.

Table 5
Overall returns for bidders in completed and abandoned bids from bid month to
12, 24 months following outcome month

| | Control Model | | |
	Adjusted Betas	Market Model	Index Model
	%	%	%
(a) Completed bids			
(i) CARs			
Bid month	−1.66	−5.55***	−2.15
to month +12	(2.08, 51)	(1.87, 44)	(1.67, 49)
Bid month	−4.67*	−14.96***	−7.43***
to month +24	(2.65, 48)	(2.81, 43)	(2.19, 48)
(ii) Value-weighted returns			
Bid month	−4.42	−9.32**	−4.54
to month +12	(3.33, 46)	(4.04, 39)	(3.76, 44)
Bid month	−2.48	−10.31*	−2.34
to month +24	(3.84, 42)	(5.52, 35)	(4.83, 36)
(b) Abandoned bids			
(i) CARs			
Bid month	−16.12***	−11.68***	−5.79*
to month +12	(4.02, 33)	(4.07, 38)	(3.19, 41)
Bid month	−26.25***	−24.20***	−7.38*
to month +24	(6.00, 29)	(5.90, 35)	(4.37, 39)
(ii) Value-weighted returns			
Bid month	−17.40	−14.11**	−9.61**
to month +12	(22.30, 19)	(5.63, 33)	(4.28, 36)
Bid month	−19.10	−20.49**	−14.54**
to month +24	(22.40, 18)	(9.75, 28)	(6.04, 33)

Note: Figures in parentheses represent standard errors followed by percentage
positive.
    *Indicates significant at 10% level.
  **Indicates significant at 5% level.
***Indicates significant at 1% level.

Although a comparison of the results for targets in completed and abandoned bids (Table 2 columns (iii) and (iv)) reveals no significant difference in the overall pattern of returns, the results indicate that completed bids were anticipated earlier than abandoned bids. It is possible that in completed bids the pre-merger returns reflect the acquisition of 'toe-hold' interests by bidders and that this acquisition contributes towards a sucessful takeover strategy (see also Franks and Harris, 1989).

(b) Announcement to Outcome

Table 3 reports the abnormal returns to the shareholders of both bidder and target companies over the period surrounding the announcement and outcome dates. As previously, the results obtained were insensitive to the choice of control model. Results are therefore reported only for the application of the adjusted betas control model.
    Bidder Companies. As shown in column (i) of

Table 3, bidders in completed bids achieve abnormal returns over the bid period of −0.20% (not significantly different from zero), when measured on an equally weighted basis. This result, if considered in isolation, provides evidence to support the hypothesis of a perfectly competitive acquisitions market with takeovers taking the characteristics of a zero net present value investment decision. Further support for the hypothesis of a perfectly competitive acquisitions market is found in the behaviour of returns to shareholders of bidding companies in abandoned bids. Over the sub-period which includes announcement of bid abandonment, shareholders of the failed bidding firms suffer a significantly negative wealth decrease of −1.28%. Indeed, in the period following announcement of the bid but prior to formal announcement of abandonment, bidding firm shareholders suffer a wealth decrease of −3.99% Not only does the market appear to view abandonment of the bid as detrimental to the interests of

Table 6
Overall returns for targets in completed and abandoned bids undertaken over the period 1977–1986. Results reported following the application of adjusted betas control model

	CAR %	Value-Weighted Return %
(a) Completed bids		
Month −3 to	37.15***	34.41***
outcome	(1.80, 85)	(5.42, 84)
(b) Abandoned bids		
Month −3 to	27.23***	18.79**
outcome	(5.15, 62)	(7.79, 68)
Month −3 to	32.39***	10.58*
month +12	(8.30, 68)	(5.44. 61)
Month −3 to	29.91***	−0.43
month +24	(9.81, 63)	(7.26, 57)

Note: Figures in parentheses represent standard errors followed by percentage positive.
*Indicates significant at 10% level.
**Indicates significant at 5% level.
***Indicates significant at 1% level.

the shareholders of the bidding firm, but the outcome of the bid is also anticipated before final announcement.

In part (a) of this section, one possible explanation of positive pre-bid abnormal performance to bidders was identified as information leaked to the market prior to formal bid announcement. In the pre-bid period, however, the ultimate bid outcome cannot be known with certainty. Therefore for this hypothesis to be valid any pre-bid returns would be weighted by the probability of the bid proving to be successful. Following bid outcome, returns to successful bidders would be expected to rise further, while returns to unsuccessful bidders would fall. While the results reported in Table 3 show that bidders in abandoned bids obtain significantly negative abnormal returns following bid announcement, the absence of positive abnormal returns to bidders in completed bids leads to rejection of the 'information leakage' hypothesis to explain positive pre-bid performance.

When computed on a value-weighted basis, returns to shareholders of bidding firms were found to be significantly negative (at the 10% level), for both completed and abandoned bids. Larger companies in completed bids, on average, earn lower returns than smaller companies both in the period prior to the bid month (see Table 2 earlier) and in the bid period itself.

Target Companies. The results obtained for target companies over the bid period reveal large, significant wealth gains to shareholders in both completed and abandoned bids. In completed bids shareholders of target companies obtain average wealth increases of over 30%, whether measured on an equally weighted or a value weighted basis. In the sub-period which includes formal announcement of the bid, target company shareholders obtain abnormal returns of around 24%, irrespective of the ultimate outcome of the bid. However, in the period of uncertainty prior to formal announcement of the outcome, shareholders of targets in completed bids obtain abnormal returns which are significantly higher (6.16% v. −3.29%) than their counterparts in abandoned bids. This result provides further evidence that the market anticipates the outcome of the bid prior to formal announcement.

The negative abnormal returns for bidders in abandoned bids was first reported for the US by Asquith (1983). His results differ for targets in abandoned bids, however, in that most of the previously obtained gains disappeared in the post-bid period. The results obtained in the current study indicate that the price of shares in target companies in abandoned bids do not, on average, fall back to their pre-bid level. As reported in the next section, this result holds even when the target company remains independent for a period of at least two years following abandonment of the bid.

(c) Post-outcome

Bidder Companies. Table 4 columns (i) and (ii) describes the distribution of returns to shareholders in bidder companies over the 24 month period following the month of announcement of the bid outcome. For both completed and abandoned bids there is a downward drift in returns over the whole period. Examination of the monthly pattern of average abnormal returns (not reported here) reveals that this pattern is not confined to any individual month of the post-outcome period. This result is consistent whichever control model was applied, with a 24 month bidder CAR using the market model of −14.08%, and −6.87% using the index model. A similar result was also reported by Franks and Harris (1989).

When the post-outcome abnormal returns are calculated on a value-weighted basis, however, a different pattern emerges, with the post-outcome abnormal returns based on application of the adjusted beta control model and the index model not significantly different from zero. While application of the market model produces a value-weighted CAR of −8.46% this is not significantly different from zero at the 10% level. These results taken together suggest that, while the market takes a considerable period to adjust to bids made by smaller companies, market reaction to bids undertaken by larger companies is more rapid and takes place in the period immediately surrounding

the bid. While the results reported using value-weighted returns also suggest that the downward reappraisal of takeover benefits is largely confined to smaller bidders, this conclusion should be treated with caution. It is possible that, because of the relative size of bidder and target, any downward reappraisal of the benefits of the bid to large bidders may be swamped by the absolute size of the bidder.

Franks and Harris (1989) report a similar pattern of post-outcome CARs measured using the market model but attribute this to bias in the calculation of alpha values. They suggest that the high pre-bid alphas represent the achievement of positive abnormal returns prior to the bid, and that the failure to repeat this performance over the post-bid period is responsible for the post-merger pattern of returns. In the current study, bidder company alpha values averaged around 0.6% (as against 0.95% reported by Franks and Harris), and may partly explain the pattern of post-merger returns, at least for those results reported using the market model. However, as described above, the results obtained in the current study using the other two control models also indicate a similar downward tendency. In addition the post-outcome results both in the current study and that of Franks and Harris may also include an upward bias through the inclusion of positive abnormal returns obtained by those bidder companies who themselves become targets for bids in the 24 month post-outcome period.

By comparison with bidders in completed bids, those bidders who are unsuccessful obtain significantly negative CARs of −20.23% over the 24 months following the bid outcome. It appears that while the market may be ambivalent in its attitude to successful bids, it has no sympathy with 'losers'.

Target Companies. Table 4 also includes data on the post-outcome returns to targets in abandoned bids. Reported CARs for the 24 month period are not significantly different from zero. This result is consistent with that reported by Firth (1980). When abnormal returns to targets in abandoned bids were recalculated on a value-weighted basis, however, a different pattern emerges, with most of the previously obtained wealth gains disappearing. The retention of bid premium is therefore confined largely to smaller targets.

(d) Overall

Bidder Companies. Table 5(a) reports the abnormal returns to bidder companies from bid month through the 12 and 24 months following the outcome month. Results are reported both on an equally weighted and a value-weighted basis for all three control models. Reported CARs display a consistent (although not always statistically significant) pattern of negative returns to bidders, whether in completed or abandoned bids. A similar consistent pattern emerges when abnormal returns were calculated on a value-weighted basis, although only the returns obtained following application of the market model were found to be significantly different from zero. The overall results reported in Table 5(a) suggest that, contrary to the impression made when examining returns around the bid period only, acquisitions are negative, rather than zero, net present value investment decisions.

The CARs reported in Table 5(b) demonstrate that failure to complete the bid also produces significantly negative wealth changes to bidders in abandoned bids. The results appear to be inconsistent in that, if the stock market views a successful bid as detrimental to the interests of the shareholders of the bidding company, then one would expect a favourable reaction to bid abandonment. It is possible, however, that the adverse reaction to bid abandonment may in part be due to the subsequent acquisition of valuable resources (the target company) by a competitor.

Target Companies. Table 6(a) reports the pattern of CARs to targets in completed bids, following application of the adjusted betas control model. The other control models also produced a similar pattern of large, significantly positive wealth increases of between 35% and 40%. Table 6(b) summarises the returns obtained by targets in abandoned bids from a base date three months prior to formal announcement of the bid. Reporting is again restricted to the results obtained following application of the adjusted betas control model, with the other models producing similar results. As found previously, by Firth (1980) and Parkinson and Dobbins (1988) for the UK, and Bradley et al. (1983) for the US, targets in abandoned bids on average retain a significant portion of the bid premium over the two years following the abandonment of the bid. However, when abnormal returns were recalculated, on a value-weighted basis, the bid premium disappeared and the market value of the targets reverted to their pre-bid level.

Wealth changes

While the above results demonstrate that shareholders of target companies make significant gains from takeovers, it is not clear whether these gains are solely as a result of a transfer of wealth from the shareholders of the bidding company or whether there is also a net wealth increase, indicating possible synergistic benefits. While the finding of a net wealth gain would not of itself support the argument of efficiency gains from mergers, as the gains may for example arise from the exercise of monopoly power, the presence of a net wealth loss would be a powerful economic argument against merger activity. In this final section of the analysis,

Table 7
Mean wealth effects on shareholders of companies involved in completed acquisitions, 1977–1986 (£millions). Results reported using adjusted betas

	Bidder[a]	Target[b]	Combined
Bid period	−13.19**	19.02***	5.84
	(5.76, 40)	(3.69, 87)	(5.09, 65)
Bid period to month +12	−13.00		6.02
	(12.30, 43)		(12.0, 56)
Bid period to month +24	−18.20		0.80
	(15.70, 40)		(15.30, 50)

Note: Figures in parentheses represent standard errors followed by percentage positive.
[a]From bid month.
[b]From month − 3.
**Indicates significant at 5% level.
***Indicates significant at 1% level.

therefore, the hypothesis was tested that completed acquisitions produce no net wealth increase to shareholders of the companies involved. For each completed bid for which data was available for both target and bidder, the wealth change to each group of ordinary shareholders was calculated:

$$\text{Wealth Change} = MV_{j,t-6}\left[\left(\prod_{t=1}^{t=n}(1 + A_{j,t})\right) - 1\right] \quad (12)$$

Wealth changes are calculated by applying the relevant abnormal return to the equity market value of each company six months prior to the bid.[6]

Abnormal returns for shareholders of bidder companies are calculated from the bid month while those for shareholders of target companies are calculated from month −3. Table 7 describes the mean wealth changes to bidder and target companies, as well as the net wealth change following application of the adjusted betas control model. While the wealth changes obtained, on average, by target company shareholders are significantly positive, the combined wealth effect indicates that this gain is achieved at the expense of shareholders of bidding companies. Combined wealth changes are not, on average, significantly different from zero.

The results reported in Table 7 do however suggest that, at worst, acquisitions are not value reducing activities and that acquisitions should not be opposed simply on those grounds. Bidder company shareholders do appear, however, to suffer wealth losses with too high a price paid for the

benefits obtained from the acquisition which appears to involve a transfer of wealth to target company shareholders (see also Firth, 1980).

Summary and conclusions

The current study examines the distribution of returns and wealth changes to shareholders of target and bidder firms in takeover bids over the period 1977 to 1986. The results provide conflicting evidence depending on the period included in the analysis of abnormal returns and the control model used. Results reported using OLS estimates of market model parameters are subject to criticism, both on the basis of bias due to infrequent trading and also possible post-bid changes in the risk-return profile of surviving companies, and must therefore be treated with caution. A number of conclusions may, however, be drawn from the results reported in the study.

If analysis of acquisitions considers only the period surrounding the bid, i.e. bid month to outcome month (Table 3), it appears that target company shareholders gain substantially from bids, and bidder company shareholders do not lose. If the post-outcome period is included in the analysis of returns and wealth changes to bidder companies, then substantial losses are experienced, on average, over a period of two years following the bid. This conclusion is most apparent using the market model but is consistent with results obtained using the other control models also. Both bidder companies and the market appear to overestimate the likely benefits to be obtained from acquisitions. The results obtained with value-weighted returns indicate that the market adjusts the price of shares of large bidders in the period immediately surrounding the bid but that the market adjustment for smaller bidders is less

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[6]The analysis was also repeated using alternative base dates, but without altering the results significantly.

immediate with wealth losses obtained over a period of up to two years following the outcome of the bid. For target companies in abandoned bids, the gains made during the bid period remain for a period of at least two years subsequent to the bid. This result may reflect one or more of a number of factors, including the prospect of future bids. Further research into this issue is recommended.

The results obtained also suggest that the gains made by target company shareholders are at the expense of shareholders of bidder companies. There is no evidence of a net wealth increase resulting from takeover activity over the period 1977–1986. One implication of this result however is that, despite the losses to shareholders of bidder companies, investors holding well-diversified portfolios will suffer no wealth decrease as a result of acquisition activity.

The results obtained identified a wide variation in the pattern of returns obtained across the sample of bidder companies. One direction which current research is taking is to examine whether there are characteristics which discriminate between those bids which produce positive abnormal returns to shareholders of bidding companies and those which produce negative abnormal returns (see Limmack, 1990; and Morck et al., 1990).

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Accounting for Convertible Loan Stock: A Decomposition Approach

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Abstract—This paper examines the accounting treatment of convertible loan stock (CLS), a popular vehicle for raising finance during the past decade. At present, CLS is treated as part of a company's borrowing with the interest charge thereon deducted in arriving at the pre-tax profit in the profit and loss account. The Technical Committee of the Institute of Chartered Accountants in England and Wales (1987) has proposed that the annual interest charge in the profit and loss account relating to CLS be adjusted so that the charge reflects 'a fair interest cost' and that the adjustment be treated in the balance sheet as a 'payment received for an option'. To date that guidance appears to have been ignored by UK companies. Our approach is different from that of the Technical Committee. We recommend that the accounting treatment of CLS should reflect its economic substance and argue that it be decomposed into two components: a straight bond component and a component which offers the holder an option to convert into equity. The straight bond component should be shown as part of a company's borrowing and the conversion option component as part of the shareholders' funds. The different approaches to accounting for CLS are illustrated by means of a case study.

Introduction

Convertible securities are hybrids which combine the characteristics of fixed interest stock with those associated with ordinary shares. They give holders the right to exchange their securities for a stated number of ordinary shares in the issuing company at a definite date (or dates) in the future at effectively a pre-determined price(s). Companies issue convertibles in the form of loan stock or preference shares which pay a fixed amount of interest or dividend. As well as UK domestic loan stock and preference shares there are also Euro-convertibles which have the same main characteristics. In this paper we examine the accounting treatment of convertible loan stock (CLS) which has been a popular means of raising finance in the past decade as Table 1 demonstrates. The amounts raised by convertible loan issues in 1988 and 1989 were £1902m and £1563m and compare with the £4422m and £2954m respectively raised by equity rights issues in the same years.

Traditionally, CLS has been treated as part of a company's borrowing with the interest treated as an expense deducted before arriving at the pre-tax profit in the profit and loss account. We recommend that the accounting treatment should reflect the economic characteristics of the security.

Following Brennan and Schwartz (1977) and Ingersoll (1977), we argue that CLS can be decomposed into two components: a straight bond component and a component which offers the holder an option to convert into equity. A company is able to issue convertible loan stock for a higher price than it would otherwise secure for a straight bond. The increase in price reflects the value of the conversion option. We recommend that the straight bond component of each security should be shown as part of a company's borrowing and the conversion option component as part of the shareholders' funds.

The recommendations in this paper are based on the assumption that the historical cost model continues to be used for financial reporting in the UK. We make no attempt to adjust for changes in the market value of the convertible after issue as would be necessary in a current value framework. The analysis could be extended to convertible preference shares and to convertible debt with multiple options including call and put features, but such extensions would require consideration of differences in rights on liquidation (preference shares) and the likelihood of conversion or redemption taking place. The existence of multiple options, such as a put feature which allows investors to redeem the convertibles after a period, involves no new valuation principles but does increase the financial reporting difficulties. Before accountants can resolve the financial reporting problems associated with these additional features they need to have a clear understanding of how to account for more basic issues of convertibles.

The paper proceeds as follows: the first section discusses professional guidance in the UK on

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Table 1
Volume of new issues of sterling convertible bonds

	Loan stock		Euro		Total	
Year	No.	£m	No.	£m	No.	£m
1982	8	122	—	—	8	122
1983	13	81	—	—	13	81
1984	20	470	—	—	20	470
1985	20	576	—	—	20	576
1986	10	1215	5	267	15	1482
1987	11	537	34	2504	45	3041
1988	9	532	18	1370	27	1902
1989	6	427	11	1136	17	1563

Source: UBS Phillips & Drew, *Convertibles Review*, 8 January, 1990, p. 2. It should be noted that the figures for Euro-convertibles include a small number of Euro-convertible preference shares.

accounting for convertible loan stock; the second section explores the notion that convertible loan stock can be decomposed for financial reporting purposes; the third section examines the different accounting treatments of convertible loan stock by means of a case study; the fourth section discusses decomposition of convertible loan stock within the context of existing UK regulations of financial reporting; conclusions are provided in the final section.

Professional guidance in the UK

The present accounting treatment of convertible loan stock has already been described. The only UK professional publication which provides guidance on accounting for convertible loan stock is Technical Release (TR) 677, 'Accounting for complex capital issues', which was issued by the Technical Committee of the Institute of Chartered Accountants in England and Wales in 1987. It sets out six general principles which should be applied when accounting for any form of complex capital issue and provides in an Appendix some illustrations of these general principles. General principles 3, 4 and 5 are relevant to this paper's focus on accounting for convertible loan stock:

(3) ... the total charge to the P & L account in any year should be based on the effective annual rate throughout the whole period of the loan. . . .

(4) Cash proceeds received on the issue of options to subscribe for the company's own shares should be treated as capital.

(5) Where a transaction has a number of constituent parts the accounting treatment of each should be considered separately, but having regard to the true commercial effect of the transaction taken as a whole.

In the Appendix convertible bonds are given as one of the examples of complex capital issues. The Appendix proposes that where the difference between the convertible bond's coupon rate and the market rate is material:

an adjustment may need to be made to charge a fair interest cost[1] in the P & L account and to treat the difference as a payment received for an option.

The logic underpinning this proposal would appear to be that the interest foregone from the convertible bondholders' point of view is, in essence, option money for the conversion rights and in accordance with principle (4) should be shown as part of shareholders' funds. However, this proposal would appear to be inconsistent with principle (5) above as it ignores the notion that a convertible bond can be divided into a straight debt component and a conversion option component. Furthermore the fair interest cost is to be charged on the whole value of the convertible as if the conversion option did not exist. This does not reflect the economic substance of convertible loan stock since the funds are not all raised on a straight bond. The result is that the supplementary charge must be too large.

The 1988–89 survey of the published accounts of around 300 UK companies (Tonkin and Skerratt, 1989) did not find one example of a company using the TR 677 accounting treatment described above. A more recent but unpublished survey of the accounting practices of 300 of the largest companies in the UK, conducted at the University of Strathclyde (Marshall, 1990), also failed to find even one example of a company implementing these TR 677 proposals.

Decomposition of convertible loan stock

The concept that a convertible bond should be decomposed into its debt and equity components for financial reporting purposes has been explored before in both the professional and academic accounting literature. In December 1966 the Accounting Principles Board (APB) in its "Omnibus Opinion—1966", Opinion No. 10(7) recommended that the proceeds from a convertible bond issue be decomposed into a straight bond component which was to be accounted for as debt and a conversion option component which was to be accounted for as paid-in capital. The recommended accounting treatment was that the total proceeds from the issue should be credited to debt and an amount equivalent to the conversion option component

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[1]It is not clear from TR677 whether the fair interest cost of a convertible bond has to be calculated using the effective annual rate (principle 3) or whether some alternative method would be acceptable.

should be debited to debt discount account and credited to paid-in capital. The debt discount account was to be set off against the proceeds of the convertible debt issue in the balance sheet so that the net amount reflected the straight bond component of the issue proceeds. The discount was then to be amortised over the life of the bond issue which would have increased the annual interest charge. Thus, this accounting treatment would have had the effect of reducing US corporations' reported net income. The publication of Opinion No. 10 led to disagreement within the accountancy profession (Ford, 1969, p. 819) and to numerous protests from corporations, particularly the airlines, which had found convertible debt a convenient means of raising finance during a period of high interest rates. Protests were also received from investment bankers who were concerned that they might lose the lucrative convertible bond business (Louis, 1968, p. 179; Miller, 1973, p. 26). The APB responded to these protests (Louis, 1968; Miller, 1973) in December 1967 with Opinion No. 12 (APB, 1967) which suspended the section of Opinion No. 10 concerned with accounting for convertible bonds.

In March 1969 the APB issued Opinion No. 14 (APB, 1969) on 'Convertible Debt and Debt Issued with Stock Purchase Warrants'. Companies issuing detachable stock purchase warrants were directed to credit paid-in capital with their fair value at date of issue. This recommendation was justified on the basis that as these warrants were separable from the bonds their value could be identified.[2] Companies issuing bonds with non-detachable warrants or issuing convertible bonds were directed to account for the entire proceeds of the issue as debt. The most important reason given for this recommendation was the inseparability of the debt and the conversion option, but the APB also expressed concern about the difficulty of valuing the two components of the convertible bond.

As regards inseparability, the APB in Opinion No. 14 argued that a convertible bondholder's rights cannot exist independently of one another—he cannot sell one right and retain the other. It is also argued in Opinion No. 14 that a bondholder's choices are mutually exclusive in that he cannot 'exercise the option to convert unless he foregoes the right to redemption and vice versa'. However, this is not a convincing argument for ignoring the economic substance of a convertible bond which is that a portion of the issue proceeds relates to the conversion option. In any event the inseparability argument has already been breached in both the

US and the UK in the current recommendations for accounting for finance leases (Financial Accounting Standards Board (FASB), 1976 and Accounting Standards Committee (ASC), 1984). The APB's concern about the difficulty of valuing the two components of a convertible need not present any difficulties for the accountancy profession as it should be possible to obtain estimates of the values of the two components at date of issue from the finance professionals advising the company on the issue (King and Ortegren, 1988; King, Ortegren and King, 1990). Thus the APB's justifications for the recommendation that the entire proceeds from a convertible bond issue be treated as debt are not convincing, although more than twenty years later Opinion No. 14 still provides the basis for the accounting treatment of convertible bonds in the USA.

The decomposition of convertible bonds for financial reporting purposes has been recommended by Ford (1969), Imdieke and Weygandt (1969), Miller (1973), Handy (1974), King, Ortegren and King (1990), and Purdy (1990). In addition, decomposition has been recommended by Swieringa and Morse (1985) to account for bonds convertible into the shares of another company and by King and Ortegren (1988) to account for adjustable rate convertible notes. The basis of decomposition recommended by Ford (1969), Miller (1973), Swieringa and Morse (1985), King and Ortegren (1988) and King, Ortegren and King (1990) is consistent with that recommended in Opinion No. 10 (APB, 1966).

Imdieke and Weygandt assume that management's original intention in issuing a convertible bond is ultimately to raise equity and that therefore conversion will take place. They use Brigham's (1966) conversion equation to predict the conversion date and then recommend that the present value of the interest payments on the convertible to that date be shown as a liability with the balance of the proceeds shown as a capital reserve. As the interest is paid and charged against each year's income, part of the liability is transferred to capital reserve so that at expected conversion date the liability would be eliminated. Imdieke and Weygandt's use of Brigham's conversion equation is an early attempt to resolve a difficult problem, the date at which conversion will take place. Subsequent to Brigham's paper, Merton (1973) shows that if the underlying security is a non-dividend paying share then investors in a convertible will never convert early. Investors will always wait until the last possible date. The reason lies in the time value of money. Conversion requires investors to forego interest, and in the absence of dividends it will always pay them to keep the convertible since the value of any increase in share price will also accrue to the convertible holders. Once dividends on the underlying shares are permitted no such

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[2]The Appendix to TR677 also proposed that bonds with detachable warrants be accounted for separately. The University of Strathclyde survey of published accounts (Marshall, 1990) has found only one example of a company which has adopted this proposed accounting treatment.

simple statement is possible. At every conversion date the convertible bondholder should ascertain whether the future interest stream on the bond is greater than that on the share. If it is, early conversion is not optimal. In essence, the holders of the convertible should never convert as long as the value of the payments they receive from the company (interest) is a greater fraction of total payments to all security holders of the firm before conversion than it would be after conversion (dividends on the shares received from conversion of the bond). The decision to convert depends on the level of both the dividends and the coupons.[3] The problem for the company is in forecasting the level of dividends and hence the conversion date.[4] One possibility is to follow Imdieke and Weygandt and calculate an expected conversion date. However, such an approach lacks appeal, not least because of the subjectivity and difficulty of forecasting dividends and the earnings changes on which they are based. The possibility of early redemption is not recognised in the accounts with respect to other securities such as debt although, depending on the relative levels of interest rates and coupons, in circumstances of falling interest rates redemption could be a widespread possibility. The difficulties of predicting future interest rates preclude such a treatment and on the same basis suggest that the recognition of early exercise of conversion is not necessary.[5,6] Further criticisms of Imdieke and

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[3]It is in this particularly that a convertible bond differs from a bond plus warrants since early conversion of the warrants will depend only on the level of dividends. Early conversion of a convertible bond depends both on the level of the dividends of the underlying shares and the coupons on the bond.

[4]Ingersoll (1987) shows that optimal exercise may *not* require all convertibles to be exercised at the same time. Monopolist and oligopolist holders can follow policies which increase the value of all convertibles at the expense of the ordinary shareholders.

[5]Conversion is contingent upon the exercise of conversion rights at some future date. Contingent rights are not shown on the face of the balance sheet but are disclosed in a note to the accounts suggesting that a note disclosing the terms of the bond is sufficient to show a true and fair view.

[6]It has been argued that if, on issue of a convertible bond, the exercise price for converting the bond into a share is close to the prevailing market price of the share then the option element of the bond will be the major element and indicates that the market assumes the probability of early conversion to be high. Conversely, if the exercise price is far from the prevailing market price then the option element will be small and the market assumes the probability of early conversion to be low. This, however, assumes that the probability of early conversion depends on the relationship between the exercise price and the market price of the share. As outlined above, this view is incorrect. The important concern is the relationship between the convertible bond coupon on issue and the dividend payments on the share. A low coupon and high dividends could lead to early conversion if dividend growth continued. However, high dividends suggest that growth opportunities are limited so that early conversion may be less likely than would appear at first sight.

Weygandt's recommendations are provided by Purdy (1977).

Handy (1974) argues that the value of the conversion option component of a convertible bond is not the difference between the proceeds from the issue of the bond and the investment value (the straight bond component) but is instead the difference between the proceeds and the conversion value at the date the bond was issued. He equates the calculation of the conversion option component with the calculation of the conversion premium (p. 39). As with APB Opinion No. 10, this amount would be shown both as a capital reserve and as discount on the bond. Thus the net amount of the bond (proceeds less discount) shown on the balance sheet would, prior to amortisation of the discount, reflect the conversion value. The main advantage which Handy claims for his recommended basis of decomposition is objectivity, in that estimates do not have to be made of either the bond's issue proceeds or its conversion value. However, he fails to provide a rationale for reporting the bond at its conversion value and consequently the basis of his decomposition is flawed.

Purdy (1990) also recognises that convertibles have both equity and debt components. He recommends that if conversion value is below straight debt value the debt component should be shown at straight debt value and if conversion value is above straight debt value the debt component should be shown at conversion value. In the former case he recommends that the equity component be shown as a capital reserve and in the latter case as a call in advance. As he acknowledges, fluctuations in a company's share price could lead to different accounting treatments of convertible debt in successive years. As Purdy's recommended accounting treatments are dependent upon the share price at balance sheet date they would not appear to be consistent with the historical cost accounting model. In any event, as in Handy (1974), it is unclear why it is appropriate to show the debt component at conversion value when that value exceeds straight debt value.

The basis of decomposition proposed in this paper is consistent with that recommended in Opinion No. 10 (APB, 1966), Ford (1969), Miller (1973), Swieringa and Morse (1985), King and Ortegren (1988) and King, Ortegren and King (1990), viz. that the proceeds of a convertible bond issue should be decomposed into a straight bond component reported as debt and a conversion option component reported as equity. This proposal would appear to reflect the economic substance of a convertible bond issue.

The notion of reporting economic substance underpins the recommendations of Exposure Draft 49, 'Reflecting the substance of transactions in

assets and liabilities' (ASC, 1990). Para. 10 states that:

> A key step in determining the substance of a transaction is to identify whether the transaction has increased or decreased ... assets or liabilities ... For this purpose, it is necessary to understand the essential characteristics of assets and liabilities.

The Exposure Draft then proceeds to explore the essential characteristics of assets and liabilities, apparently drawing heavily on the relevant part of the FASB's conceptual framework project. Statement of Financial Accounting Concepts 6 (FASB, 1985). Para. 54 of the Exposure Draft states that:

> The essential characteristics of a liability are that it is a present obligation ... which is expected to result in an outflow from the enterprise of resources embodying economic benefits.

After a convertible bond issue there will be an outflow of 'resources embodying economic benefits' in the form of the periodic payments of interest together with the repayment of the principal amount at maturity. We recommend that the present value of these outflows be treated as a liability which will reflect the straight bond component of the proceeds of a convertible bond issue. The difference between the proceeds and the straight bond component will reflect the portion of the proceeds paid by the convertible bondholders for the option to convert into equity. We recommend that this conversion option component be shown as part of shareholders' funds. Finally, we recommend that the terms of the convertible bond be disclosed in the notes to the accounts, including disclosure of the maximum legal liability relating to repayment of the bond.

Alternative accounting treatments: an illustrative case study

The issue on 1 December 1988 of £155.93m 7% convertible unsecured loan stock 2008 by Cable and Wireless plc (C & W) provides an example of present accounting practice with respect to convertible loan stock and allows us to demonstrate the implications of TR 677 and our suggested alternative treatment. The issue is described in the 1989 accounts (p. 61) as follows:

> The convertible unsecured loan stock carries interest at 7 per cent per annum. During the year the Company issued 155,926,883 units of convertible unsecured loan stock, nominal value £1 per unit. This stock is convertible into ordinary shares of Cable and Wireless plc on the 31 August, 1989 and on the 31 August in each

subsequent year up to and including 2008, on the basis of one share for every 412p nominal of loan stock.

The issue embodies two possibilities for the investor:

(i) A call option which involves converting when profitable to ordinary shares. This may occur at a specified date in each year of the convertible's 20 year life.
(ii) Holding the issue as a fixed interest loan until final redemption in 2008.

Present Accounting Treatment

In the published accounts of C & W the nominal amount of the convertible is shown under 'Creditors: Amounts falling due after more than one year'. However, C & W do not separately identify the convertible interest charge in the interest note to the accounts. Table 2 illustrates C & W's accounting treatment of this convertible at date of issue, the company's expected accounting treatment of each full year's interest charge, assuming no conversions have taken place, and finally the expected balance sheet adjustments at conversion assuming all holders opt for conversion at the same date.

If conversion takes place the amount transferred to the share premium account represents the difference between the 50p nominal value of C & W's ordinary shares and the conversion price of 412p.

Accounting Treatment Proposed by TR 677

If the suggestions in the Appendix to TR677 had been followed the annual interest charge in the profit and loss account of C & W would have been increased so that it reflected what the interest charge would have been if all the funds had been

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Table 2
Present accounting treatment

	£m	£m
Issued 1/12/88		
Bank	155.93	
7% Convertible unsecured loan stock 2008		155.93
Annual interest charge		
Interest charge (7% of £155.93m)	10.90	
Bank		10.90
If converted		
7% Convertible unsecured loan stock 2008	155.93	
Issued share capital		18.92
Share premium		137.01

raised through the issue of a straight bond. The additional interest charge might be calculated as follows:

Yield to maturity of a straight bond
   at 1 December 1988[7]   11%
Annual interest on a straight bond
   of £155.93 at 11%   £17.15m
Actual annual interest charge on
   C & W's convertible   £10.90m
Additional annual interest charge   £6.25m

The accounting treatment proposed by TR677 is illustrated in Table 3.

This accounting treatment results in the conversion option appearing in the shareholders' funds specifically described as a conversion option, and as an integral part of the nominal value of the 7% convertible unsecured loan stock included in creditors. This leaves a problem in deciding how to treat the conversion option after conversion has taken place. Should the outstanding balance be transferred back to retained earnings and be available for distribution? Or, alternatively, should it be transferred to share premium account as part of the cost borne each year by the holders of the convertible (in terms of a reduced amount of interest received) in order to have the opportunity to convert into ordinary shares at some future date?

Accounting Treatment as a Result of Decomposition

The straight bond component and the conversion option component of C & W's issue of convertible loan stock can be calculated as follows:[8]

Proceeds from issue of 7% Convertible
   unsecured loan stock 2008   £155.93m
Present value of probable future
   sacrifices of economic benefits using
   a discount rate of 11%   £105.85m
Value of conversion option/discount
   on issue   £50.08m

As the coupon rate of interest (7%) on the convertible loan stock issued by C & W is lower than the appropriate market-related rate of interest at the date of issue (approximately 11%) the present value of the bi-annual payments of interest plus the present value of the repayment of the principal amount at maturity (£105.85m) is lower than the issue proceeds of £155.93m. The difference of £50.08m represents the portion of the proceeds

Table 3 Accounting treatment proposed by TR677		
	£m	£m
Issued 1/12/88		
Bank	155.93	
7% Convertible unsecured loan stock 2008		155.93
Annual interest charge		
Interest charge (11% of £155.93m)	17.15	
Bank		10.90
Conversion option		6.25
If converted		
7% Convertible unsecured loan stock 2008	155.93	
Issued share capital		18.92
Share premium		137.01

paid by the holders of the convertible for the option to convert into equity at some future date and at the same time the discount on the issue which reflects the reduction in the present value of the interest payable over the life of the bond by C & W as a result of raising the £155.93m through the issue of a convertible rather than a straight bond.

The accounting treatment resulting from decomposition of C & W's convertible is shown in Table 4. At the date of issue the £50.08m calculated above is treated as a conversion option and as discount on the issue of the convertible. In the balance sheet the conversion option is shown as part of the shareholders' funds[9] and the discount as a deduction from the proceeds from the issue of the convertible.[10] The discount is amortised over the life of the bond using the effective annual rate method.[11] As amortisation takes place the value of the bond element rises. The calculations of the annual interest charges are shown in the Appendix. If conversion does not take place, the interest charge increases each year to reflect the increase in the net amount of the loan (original proceeds less discount) shown on the balance sheet. The increase in the interest charge over the life of the loan reflects the increase in the present value of the

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[7]This is the (approximate) rate of interest prevailing in the market on the issue date on 20 year, low risk, fixed interest securities.

[8]The evidence in King and Ortegren (1988) and King, Ortegren and King (1990) suggests that a company's financial advisers should be able to provide estimates of the straight bond and the conversion option component of a convertible bond issue.

[9]Since the analysis is within the historic cost model no attempt is made to adjust the conversion option to reflect changes in the market value of the convertible loan stock just as no attempt is made to adjust the share premium account to reflect changes in the market values of shares.

[10]As the accounting treatment resulting from decomposition does not reflect the total legal liability on the face of the balance sheet we propose that this be disclosed in the notes to the accounts.

[11]The basis for this recommendation is the existing treatment of finance leases and the arguments raised by the Technical Committee of the Institute of Chartered Accountants in England and Wales (1987) and (1989).

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straight bond component as repayment draws nearer. The interest charges for the first and last years of the loan are shown for illustrative purposes in Table 4. If conversion takes place the adjustments will reflect the extent to which the discount has been amortised. The smaller the unamortised balance of discount on the convertible is at the date of conversion, the larger the transfer to share premium account will be. At conversion the share premium account represents the difference between the nominal amount of the shares and the amount which the bondholders have sacrificed for the shares which is the original price of the loan stock plus the present value of the interest sacrificed to date of conversion.

Comparison of the Effects of Alternative Accounting Treatments

The effects of alternative accounting treatments of the interest charge on the convertible loan stock issued by C & W are demonstrated in Figure 1. As can be seen, the present accounting treatment results in an annual charge of £10.90 million until either conversion or redemption. With the accounting treatment proposed by TR677 that annual charge will increase to £17.15 million. The accounting treatment as a result of decomposition results in an annual interest charge which will increase each year from £11.70 in the first year to £16.37 in the final year as the present value of the liability increases.

As the C & W case study demonstrates, the present accounting treatment of convertible loan stock fails to reflect its economic substance as the conversion option component is recorded at zero. The interest charge in the profit and loss reflects the coupon rate of interest and not the effective rate of interest over the duration of the loan. As the coupon rate of interest is lower than the effective rate of interest, reported profits are higher than they would be if the charge were based on the effective rate.

The accounting treatment proposed by TR677 also fails to reflect the economic substance of convertible loan stock. The conversion option component of the issue proceeds is again recorded at zero. It is ignored in the calculation of the supplementary interest charge. As a result that charge is overstated and profits are understated. From a profit and loss account perspective the TR's recommendations represent a probably unintentional example of very conservative accounting. In the balance sheet the supplementary interest is accumulated and recorded as a conversion option which is intended to reflect the interest saved by the firm up to balance sheet date as a result of raising the proceeds through the issue of a convertible bond rather than a straight bond. The extent to which the supplementary interest is overstated by the TR's proposals is illustrated by the C & W example. If the company's loan stock is not converted the conversion option will accumulate to £125m over the life of the bond. Decomposition of the issue proceeds shows the conversion option component at over £50m. Thus at maturity the TR's proposals would effectively be showing the conversion option component at £175m. This is clearly nonsense as the initial proceeds only amounted to £155.93m.

Our proposed accounting treatment does reflect the economic substance of the proceeds of the convertible bond issued by C & W. In the balance sheet, as a result of decomposition, the straight bond component of £105.85m (proceeds of £155.93m less discount of £50.08m) would be shown as a liability and the conversion option component of £50.08m would be shown as part of shareholders' funds. The use of the effective annual rate to amortise the discount ensures that the interest charge in the profit and loss represents interest at a constant rate on the net amount shown as a liability for the convertible at any point in time.

In order to explore the effect of the alternative accounting treatments on the company's gearing we have calculated the effect of these alternatives

Table 4
Accounting treatment as a result of decomposition

	£m	£m
Issued 1/12/88		
Bank	155.93	
Discount on 7% convertible unsecured loan stock 2008	50.08	
7% Convertible unsecured loan stock 2008		155.93
Conversion option		50.08
Annual interest charge—year ended 31/3/90		
Interest charge	11.70	
Bank		10.90
Amortisation of discount on 7% convertible unsecured loan stock 2008		0.80
Annual interest charge—year ended 31/3/08		
Interest charge	16.37	
Bank		10.90
Amortisation of discount on 7% convertible		5.47
On conversion at 30/8/93		
7% Convertible unsecured loan stock 2008	155.93	
Conversion option	50.08	
Issued share capital		18.92
Share premium		141.06
Unamortised discount on 7% convertible		46.03

Figure 1
Alternative interest charges on Cable and Wireless convertible

— ■— Coupon Interest   —◆— TR 677 Interest   —▶— Decomposition Interest
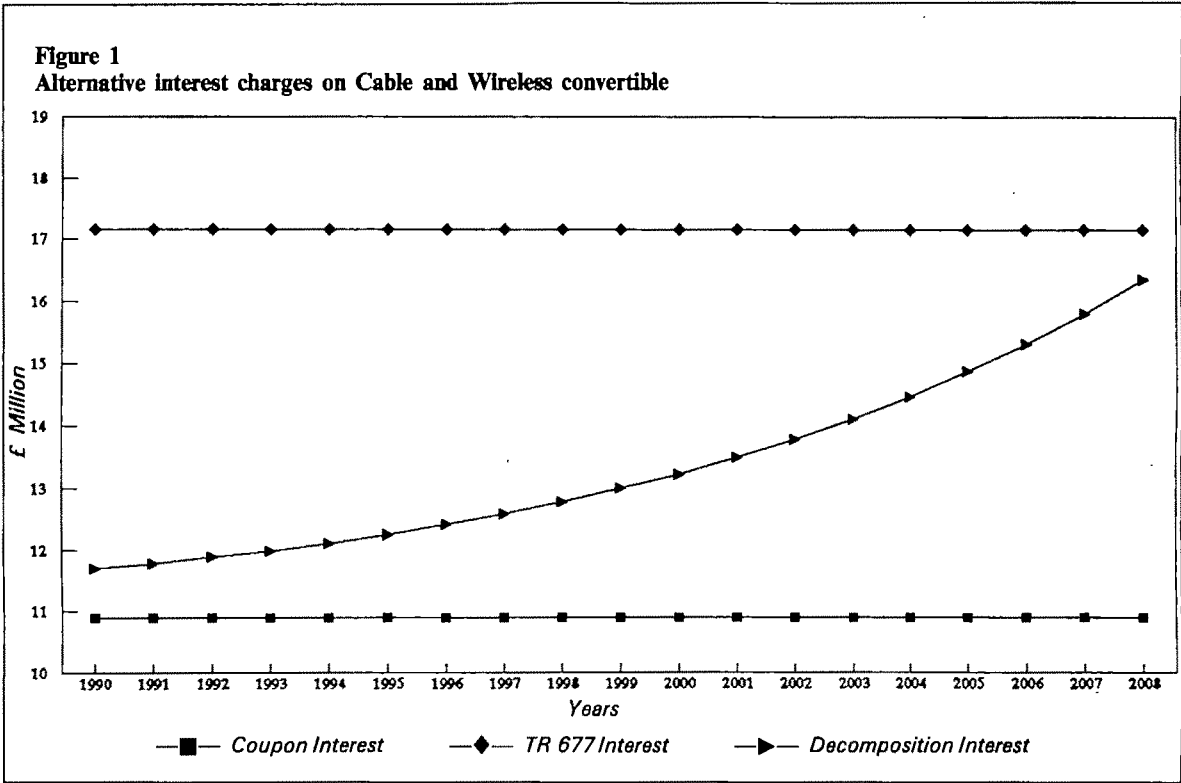
on two of the ratios reported by Datastream: the income gearing percentage and the borrowing ratio. These ratios are calculated by Datastream as follows:

$$\text{Incoming gearing percentage} = \frac{\text{Total interest charges}}{\text{Operating profit} + \text{total non-operating income}} \times \frac{100}{1}$$

$$\text{Borrowing ratio} = \frac{\text{Total loan capital} + \text{borrowing repayable in less than one year}}{\text{Total equity capital} + \text{reserves} + \text{deferred tax} - \text{total intangibles}}$$

Using the figures reported in the published accounts of C & W for the year ended 31 March 1990 and the adjustments shown in Tables 3 and 4, Table 5 shows the effects of the alternative accounting treatments of the company's convertible loan stock on the above ratios.

The accounting treatment proposed by TR677 would increase the income gearing percentage by 1.07% as a result of TR677's proposed additional interest charge which amounts to £6.25m per annum. The accounting treatment resulting from decomposition would increase the income gearing by 0.14% as a result of the amortisation of the discount. As the Appendix shows, the amount amortised each year would increase as the present value of the straight bond component increases. Hence, the difference between the income gearing percentage based on the present accounting treatment and that based on the accounting treatment resulting from decomposition would increase over

Table 5
Effect of alternative accounting treatments on gearing ratios

	Present accounting treatment	TR677 accounting treatment	Decomposition accounting treatment
Income gearing percentage	12.66%	13.73%	12.80%
Borrowing ratio	0.29	0.29	0.26

the life of the loan stock assuming no conversions took place.

As Table 5 shows, the accounting treatment proposed by TR677 would not affect the borrowing ratio for the year ended 31 March 1990. However, in future years as the additional interest accumulates in reserves as amounts received for a conversion option there would be a very small decreasing effect on the borrowing ratio. The accounting treatment resulting from decomposition would decrease the borrowing ratio by 0.03. This is because the reduction in the loan stock as a result of the unamortised discount would have a greater effect on the ratio than the increase in the reserves as a result of the conversion option. However, this reduction in the borrowing ratio would decrease over the life of the loan stock as the discount is amortised.

Decomposition and UK regulation of financial reporting

This section discusses, within the context of existing UK regulations, the notion that the proceeds of a convertible bond issue should be decomposed into its debt and equity components for financial reporting purposes. Our proposed accounting treatment focuses on the economic substance of a convertible bond rather than on its legal form. Although we also propose that the total legal liability be disclosed in the notes to the accounts, nevertheless we suspect that our proposals would not be acceptable to the legal profession. On the basis of the wording of the contractual arrangements between a company and its convertible bondholders, the legal profession might argue that the total liability relating to a convertible bond should be treated as debt in the balance sheet. Furthermore, the proposal that the conversion option component of a convertible debt issue be shown as equity would not appear to be consistent with Note 7 on Balance Sheet formats in Schedule 4 of the Companies Act 1985 which indicates that convertible loans should be shown as debt. Similarly, our proposal that the straight bond component of the proceeds of a convertible bond be shown as a net amount (proceeds less unamortised discount) may conflict with Schedule 4, para. 5 of the Act, which prohibits a company from showing an asset as a deduction from a liability.[12] Although section 228 (3) of the Act requires a company to depart from detailed legal requirements provided it can be established that such a departure is necessary in order to show a true and fair view, the circumstances in which such a departure should take place have been the subject of considerable debate between the legal and accountancy pro-

fessions. Aldwinckle (1987) argues that from a legal perspective such a departure can take place only when a combination of adhering to specific legal requirements in the financial statements and describing the economic substance through additional disclosure fails to show a true and fair view. The counter-argument from the accountancy profession (Tweedie and Kellas, 1987, 1988 and Wild, 1987) is that a misleading balance sheet or profit and loss account even when supplemented by additional disclosure can never reflect a true and fair view. In order to show a true and fair view the economic substance must be reflected in the financial statements together with sufficient disclosures to make the transaction understandable.[13]

The approach adopted for the amortisation of the discount on convertibles is consistent with current recommendations on the amortisation of the discount on deep-discount and zero-coupon bonds. Paragraph 24 of Schedule 4 of the Companies Act 1985 allows such discount to be treated as an asset to be written off by 'reasonable amounts' over the life of the bond. Section 130 (2) of the Act allows the discount on the issue of shares and debentures to be written off against share premium account. However, a general thrust of both the original and the revised versions of SSAP6 (ASC, 1974 and 1986) is to minimise the use of reserve accounting. The discussion paper (ASC, 1983) issued prior to the revised SSAP6 recommended (para. 2.14) that the discount on a deep-discount bond be amortised over the life of the bond and included as part of the annual interest charge in the profit and loss account. Since the 1983 Budget the Inland Revenue has allowed a borrowing company to spread a deep discount (more than 15% of the nominal amount) over the life of the bond when calculating its taxable profits. More recently TR677 proposed that deep discount should be charged through the profit and loss account (principle 2).

The adoption of the effective annual rate for amortising the discount on a convertible to each year's profit and loss account is not inconsistent with the Companies Act requirement that the amounts written off be reasonable (Schedule 4, para. 24) and is consistent with the guidance in TR677 (principle 3) and TR773. It is also consistent with US standard practice as recommended by the APB in Opinion No. 21 (APB, 1971). In the USA, as Macve (1984, p. 100) points out:

the effective-interest method is a unifying principle that underlies the standard accounting treatments used for long-term liabilities, including leases and pensions.

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[12]This is the form of presentation adopted in the USA for deep-discount bonds (Macve, 1984, p. 95).

[13]The notion of substance over form has received considerable support in the authoritative accounting literature over the last twenty years (see Rutherford, 1988, chapter 1).

Similarly, in the UK the effective annual rate has been adopted in the recommended accounting treatment of leases (ASC, 1984) and pensions (ASC, 1988). In some accounting textbooks (Briston, 1981 and Lee, 1986) it has been argued that the effective annual rate is the 'theoretically correct' method. However, as Macve (1984, p. 101) has pointed out, the effective annual rate will not generally reflect the actual interest cost in any single year of a bond's life.[14]

Conclusion

In this paper we have shown how convertible loan stock can be decomposed into its debt and equity components. We have compared the present accounting treatment of convertible loan stock with the treatment proposed by TR677 and with our own proposed accounting treatment based on decomposition. We argue that only our proposals reflect the economic substance of the transaction. Our proposals are consistent with the general principles set out (but not adhered to) in TR677. Decomposition would also appear to be consistent with the FASB's recently stated strategy of identifying the building blocks when focusing on the financial reporting problems presented by new financial instruments generally (Bullen, Wilkins and Woods, 1989).

We have only considered the simplest convertible security. Related questions arise in the treatment of convertible preference shares, convertible capital bonds, bonds with warrants and more complex instruments involving calls and puts. It is hoped that this paper will serve as a catalyst for further discussion of these issues.

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Appendix

Calculation of interest charges on Cable & Wireless 7% convertible unsecured loan stock 2008

Repayment date	Present value of loan stock at beginning of half year	11% of the present value of loan stock	Coupon interest charge	Amortisation of discount
3/1989	105.85	3.88	3.60	0.28
9/1989	106.13	5.84	5.45	0.39
3/1990	106.52	5.86	5.45	0.41
9/1990	106.93	5.88	5.45	0.43
3/1991	107.36	5.91	5.45	0.46
9/1991	107.82	5.93	5.45	0.48
3/1992	108.30	5.96	5.45	0.51
9/1992	108.80	5.98	5.45	0.53
3/1993	109.34	6.01	5.45	0.56
9/1993	109.90	6.04	5.45	0.59
3/1994	110.49	6.08	5.45	0.63
9/1994	111.12	6.11	5.45	0.66
3/1995	111.78	6.15	5.45	0.70
9/1995	112.48	6.19	5.45	0.74
3/1996	113.22	6.23	5.45	0.78
9/1996	114.00	6.27	5.45	0.82
3/1997	114.82	6.31	5.45	0.86
9/1997	115.68	6.36	5.45	0.91
3/1998	116.59	6.41	5.45	0.96
9/1998	117.55	6.47	5.45	1.02
3/1999	118.57	6.52	5.45	1.07
9/1999	119.64	6.58	5.45	1.13
3/2000	120.77	6.64	5.45	1.19
9/2000	121.96	6.71	5.45	1.26
3/2001	123.22	6.78	5.45	1.33
9/2001	124.55	6.85	5.45	1.40
3/2002	125.95	6.93	5.45	1.48
9/2002	127.43	7.01	5.45	1.56
3/2003	128.99	7.09	5.45	1.64
9/2003	130.63	7.18	5.45	1.73
3/2004	132.36	7.28	5.45	1.83
9/2004	134.19	7.38	5.45	1.93
3/2005	136.13	7.49	5.45	2.04
9/2005	138.16	7.60	5.45	2.15
3/2006	140.31	7.72	5.45	2.27
9/2006	142.58	7.84	5.45	2.39
3/2007	144.97	7.97	5.45	2.52
9/2007	147.49	8.11	5.45	2.66
3/2008	150.16	8.26	5.45	2.81
9/2008	152.96	8.42	5.45	2.97
		266.23	216.15	50.08

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Cycles in UK Standard Setting

Christopher Nobes*

Abstract—Observation of UK standard setting between 1970 and 1990 suggests the existence of cyclical patterns. The feature exhibiting the pattern for any topic was the degree of standardisation proposed in documents issued by the Accounting Standards Committee. A model is developed in which the pattern is argued to be caused by the opposition of two forces: a downward force exerted by corporate managers with some professional support; and an upward force exerted by individual senior members of the profession supported by government, press and international influences. The energy to start the cycle comes in the form of a variety of external stimuli. The model is illustrated using five controversial topics: inflation accounting; research and development; deferred tax; merger accounting; and goodwill.

Cycles or waves are a feature of many natural phenomena. In economics, also, cycles have been inferred (e.g. Kondratieff, 1925). In physics, cycles occur under certain circumstances when opposing forces act upon an object. These cycles begin when energy is introduced into a system. This paper suggests that a mechanism of this sort explains standard setting on several topics, particularly in the UK political environment that existed during the ASC's life from 1970 to 1990, which has been described as associationist by Puxty *et al.* (1987). The model might be extensible to other issues, countries or times. Obviously, as in any social or biological system, the cycles are less precise than those observed in physics. Also, it is not intended that the word 'cycle' should imply self-sustainment or distinct regularity (Keynes, 1936, p. 314), but merely 'a recurrent round or course of successive events, of phenomena, etc.' (Oxford English Dictionary).

A cyclical model of accounting standard setting

The feature of accounting standard setting which is seen here as exhibiting a cyclical pattern is the degree of standardisation; in particular, the degree to which all companies would be required to adopt the same measurement practices. The cases examined are inflation accounting; research and development; deferred tax; merger accounting; and goodwill. The starting point for any topic is unregulated practice which, at least in the UK in this period, tends to be non-uniform and to avoid

income-reducing practices (i.e. those that cause reported profits to fall). The energy that starts the cyclical standard-setting process is provided by criticism of accounting practice from the profession or by government or press; economic shocks such as inflation or a wave of take-overs; or international comparisons.

The opposing forces suggested are:

(i) a 'downward force' which acts against standardisation, and
(ii) an 'upward force' which promotes standardisation.

It is suggested that the downward force is exerted by managers who, in general, will seek to maintain flexibility of practices, and also to oppose the introduction of income-reducing standards. Watts and Zimmerman (1978) suggest that the lobbying motives of US managers are concerned with: political costs, taxation, regulation, bookkeeping costs and management compensation. It is suggested that, in the UK, the political costs of large profits were not great for most companies;[1] and the taxation costs were usually unimportant because of the separation of tax from accounting in most areas. This is particularly the case for standards on inflation accounting, deferred tax, merger accounting and goodwill on consolidation (all examined below) because none of these affects the conventional pre-tax profit calculations of individual taxable entities. Management lobbying might have been different if they did. Regulation costs relate to regulated industries which comprise very few organisations in the UK. 'Bookkeeping costs' are

[1] For 15 of the $20\frac{1}{2}$ years of the ASC's life, there were Conservative governments by whom profits were seen as good. Certainly in the 1980s this was the prevailing ethos. Of course, regulated industries have special reasons for deflating profit (McInnes, 1990).

unlikely to be important,[2] except in the case of inflation accounting. This would suggest that managers are mainly affected by the fifth factor: their view of the effect of earnings figures on their compensation through any effects on share prices, perceptions of management's success, vulnerability to takeover, and directly on bonuses. In addition, it is suggested here that managers wish for maximum flexibility as this allows scope for dealing with changes in the environment or the fluctuations of fortune of their particular company. Managers may be supported by audit firms which are, in effect, hired by management.

The opposing upward force is provided by the independent mindedness of individual senior members of the profession, using conventional accounting logic[3] on particular controversies. This could be made to fit a wider version of Watts and Zimmerman's self-interest thesis, in that the profession wishes to preserve its reputation for integrity, and wishes to avoid scandals and government interference (Laughlin and Puxty, 1983). However, as Sterling (1990, p. 103) points out, the self-interest concept is not falsifiable and, therefore, by 'explaining' all behaviour it explains none.

Of course, there will usually be some independent minded senior professionals on the other side of any issue, as suggested by Watts and Zimmerman (1979) in their 'market for excuses' paper. Managers may cite the views of these respected figures as support for the downward force on appropriate issues, while ignoring the views of the same figures on other issues.[4] Some senior professionals may appear to be members of both the upward and the downward force. In their capacity as members of the ASC or of technical committees, they may argue privately or ballot secretly for standardised proposals, whereas in press conferences or as representatives of large firms or companies it may be politically necessary to appear non-committal or hostile to proposals that management object to. A clear example of this is the case of goodwill, as discussed in Nobes (1991).

The upward force is supported by government and the financial press, complaining of an uncontrolled profusion of accounting practices. It may also be supported by international pressure for harmonisation, particularly in relation to US practice which is generally more standardised. In addition, in the late 1980s, the International Accounting Standards Committee (IASC) began a programme of removal of options from its standards (as mentioned later). These players seem to have different importance over time, with the media and the Department of Trade and Industry (DTI) being significant during the founding of the ASC, and the DTI re-establishing its importance in the 1980s as the law started to contain an increasing amount of accounting provisions.

Some UK examples

Five cases are chosen[5] here as illustrations of the cycle model: inflation accounting; research and development; deferred tax; merger accounting; and goodwill. These cases account for a substantial proportion of the controversy and the publications of the ASC in its twenty-one year life. The first three cases have been partially written up elsewhere, but another decade or so can now be added to the histories. The fourth case (merger accounting) and the fifth case (goodwill) are also examined.

Inflation Accounting

Mumford (1979) and Westwick (1980) are among the papers that take an overview of the UK inflation accounting debate, and Tweedie and Whittington (1984) provide a more extended analysis. Sutton (1988) provides some evidence on lobbying motives. Mumford's paper, entitled 'The end of a familiar inflation accounting cycle', identifies a cyclical pattern in the degree of interest by various parties in the matter of inflation accounting. The cycle of professional discussion starts, not surprisingly, with the experience of rising inflation. His paper stops in 1978, but there were more cycles to come. Purdy (1990) also notes the rise and fall of prominence of an issue in the case of accounting for convertible debt.

This present paper examines the cyclical pattern of a different feature: the degree of standardisation proposed. Applying the facts to the cycle model, the rise in inflation and the resulting criticism of historical cost supply the energy that starts the cycle off. The countervailing forces are as described before, with managers opposed to standardisation on various income-reducing practices, in particular current cost accounting (CCA) which had the added disadvantage of being expensive to im-

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[2]Bookkeeping costs would presumably be larger for capitalisation of R&D or goodwill than for immediate expensing or write-off; larger for full allocation of deferred tax using the liability method than for any other combination; and larger for acquisition accounting than for merger accounting.

[3]By 'conventional accounting logic' is meant argument based on double-entry principles, the matching convention, articulation of the balance sheet with the profit and loss account, 'true and fair' etc. Such logic does not lead to unique solutions but reduces the number of solutions regarded as reasonable.

[4]For example, Solomons (1989) and Tweedie and Stacy (1989) are on record as opponents of systematic goodwill amortisation charges. This is viewed with satisfaction by managers; but they would be strongly opposed to the views of these writers on the need for a form of current value accounting.

[5]It is not suggested that standard-setting on all topics exhibits cyclical behaviour: for example, some topics are uncontroversial (e.g. SSAP 5 on VAT); some are mainly concerned with disclosure or rearrangements of disclosed data (e.g. SSAP 10 on funds flow); some have exhibited erratic behaviour in the USA but not in the UK during the ASC's life (e.g. SSAP 20 on currency translation).

Figure 1.
The Inflation Cycle

[Figure 1: A graph with y-axis labeled "Degree of standardisation" ranging from Low to High, and x-axis showing years from 70 to 90. Data points plotted: ED 8, PSSAP 7, PSSAP withdrawn, ED 18, ICAEW vote, ED 24, SSAP 16, HYDE, ED 35, SSAP 16 withdrawn]
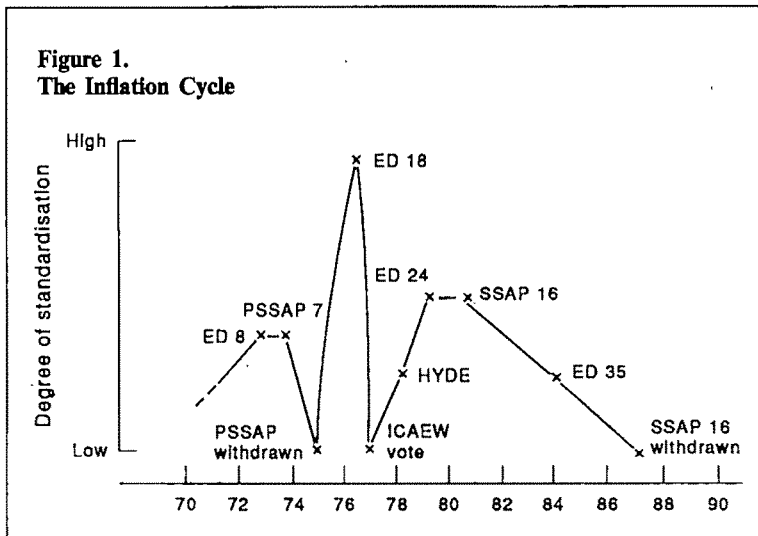
plement and operate. The upward force was provided by senior members of the profession, including academics, who began the discussions in the early 1950s and again in the late 1960s; they were supported, in the idea that action was needed, by government and press. The profession preferred the simple and more easily auditable current purchasing power (CPP) system, but the government and academics pushed them further along the route to income reduction,[6] namely to CCA.

The cycle is impressionistically illustrated in Figure 1. It shows a peak of standardisation with ED 18 which would have required universal replacement of historical cost financial statements. By contrast, PSSAP 7 and SSAP 16, for example, required only supplementary information from a relatively few companies. (A list of titles and dates of ASC exposure drafts and standards referred to here is given in Appendix I.) Figure 1 records that the downward force had overwhelmed the upward, when the energy went out of the system due to the rapid decline of inflation in the early 1980s. Of course, the cycle could start again if enough energy were put into the system as a result of inflation rising above a certain level. In Figure 1 and the following four figures, all the points[7] recorded are the issue or withdrawal of documents by the Accounting Standards Committee. The figures start from a low point of a lack of ASC documents and of varied practice. An explanation of the scoring on the y-axis is given in Appendix II.

Research and Development

Nobes (1976) and Hope and Gray (1982) record the UK debate on research and development,

though they do not discuss any cyclical pattern. In terms of this paper's thesis, the external stimuli to action by the ASC are the collapse of Rolls-Royce in 1971; the later publication of a standard by the FASB (SFAS 2); and, particularly, the drafting by the IASC of an exposure draft (E9) which was being discussed in 1975 and 1976. The two forces involved are as explained in the first section of the paper, above.

ED 14 would have required full standardisation on the immediate expensing method, which would have been income-reducing for some companies. ED 17 retreated to standardisation on expensing where appropriate and capitalisation where appropriate. SSAP 13 retreated further to the position of allowing a free choice, subject to certain criteria in the case of capitalisation.

Figure 2 illustrates this case, which is rather less elaborate than that for the other cases in this section, but does show one wave, starting with varied practice, reaching a peak of proposed standardisation and then falling in two stages. This

Figure 2.
The R & D Cycle

[Figure 2: A graph with y-axis labeled "Degree of standardisation" ranging from Low to High, and x-axis showing years 75, 76, 77, 78, 86, 87, 88, 89. Data points plotted: ED 14, ED 17, SSAP 13, ED 41, SSAP 13 (revised)]

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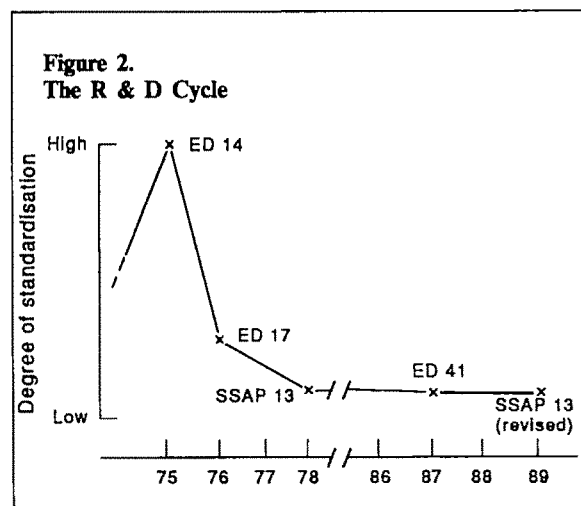
[6]CCA generally gives lower profits than CPP (e.g. Phillips and Drew, 1975).

[7]The crosses on the figures are discrete points. Therefore, as is conventional, the lines between them are purely to clarify the location of the points, and hence are not shown as curves.

Figure 3.
The Deferred Tax Cycle
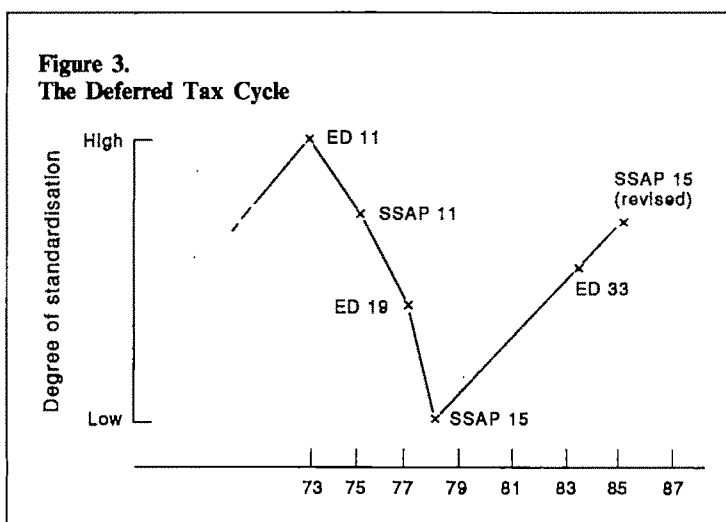
may not be the end of the story, however, since the fairly lax criteria of SSAP 13 might still allow cases such as Rolls-Royce.

Deferred Tax

The deferred tax case up to 1981 is examined by Hope and Briggs (1982). They identify pressures from various parties, but do not specifically propose a cycle. Arnold and Webb (1989) bring the story further up to date, and suggest several examples of political pressure (e.g. in Chapter 8).

In terms of the model suggested in this paper, the energy in the system was provided by the acknowledgement that deferred tax was a major financial accounting issue treated in a non-uniform way (ICAEW, 1972). Also in 1972 and 1974, respectively, the two major causes of UK deferred tax were introduced: very generous capital allowances (e.g. 100% in the first year for plant and machinery) and stock appreciation relief.[8] In addition, the imputation system of corporation tax was introduced in 1973. A subsequent stimulus was the major change to all these matters in 1984.

In 1973, the ASC published ED 11, followed by the similar SSAP 11 in 1975. These documents required full accounting for deferred tax, which is consistent with US practice and with conventional accruals accounting logic. Also, it was the majority practice of large UK companies (ICAEW, 1972). One difference between the documents was that ED 11 required the deferral method (as does APB Opinion 11), whereas SSAP 11 allows the deferral or the liability method. Thus, ED 11 was the peak of standardisation.

The compulsory full accounting for deferred tax is, of course, usually an income-reducing rule. It

also creates deferred tax quasi-liabilities which are unattractive to management. By the late 1970s, high UK inflation had acted upon the causes of timing differences mentioned above to create very large deferred tax credit balances. Management lobbying (see Hope and Briggs, 1982; Carty, 1982) led the ASC to publish ED 19 in 1977 and SSAP 15 in 1978. These moved away from the former Anglo-Saxon consensus towards 'partial allocation'; that is, only accounting for deferred tax when it was expected to crystallise in the foreseeable future. ED 19 was criticised by some large accountancy firms for lacking logic and for being too difficult to audit. However, managers were heavily in favour of it.

ED 19 and SSAP 15 were drafted in a sufficiently loose way that they allowed either partial or full allocation. Further, although ED 19 required the liability method, SSAP 15 allowed both liability and deferral. SSAP 15 thus represents the nadir of standardisation. This led to criticism, to ED 33 of 1983, to SSAP 15 (revised) of 1985. These new rules *required* partial allocation. However, exactly what is in the foreseeable future will depend upon the vision of the directors of the company. So, a degree of lack of standardisation persists. ED 33 allowed the liability or the deferral method whereas SSAP 15 (revised) requires the liability method.

This cyclical standard-setting behaviour is illustrated in Figure 3. The upward force was provided by individual senior members of the profession supported by some professional firms and by the press and academics. The downward force was provided by management supported by some other professional firms (Hope and Briggs, 1982).

Merger Accounting

The story of the regulation of merger accounting in the UK is long and complicated, as illustrated in Table 1. This paper concentrates on the publications of the ASC: ED 3, ED 31, SSAP 23 and ED

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[8]Stock appreciation relief was an approximate means of adjusting taxable income, but not accounting profit, for inflationary holding gains on inventories. Again approximately, it amounted to the use of LIFO for tax purposes.

Table 1
Merger Accounting Highlights

Late Merger accounting used for some large
1960s UK business combinations.

1971 ED 3 would demand merger accounting
for mergers, and acquisition accounting
for acquisitions, although the rules
might be avoidable. ED 3 lapses after
suggestions of illegality under the Com-
panies Act 1948.

1980 Shearer v Bercain. This tax case held,
obiter dicta, that merger accounting was
illegal.

1981 Companies Act grants merger relief
(subsequently in s.131 of Companies Act
1985).

1982 ED 31 would impose standard practice
similar to ED 3.

1985 SSAP 23 allows acquisition accounting
to be used for mergers, and continues to
have rules which can be evaded.

1990 ED 48 would demand merger accounting
for mergers, and acquisition accounting
for acquisitions. Also, the rules would be
much tighter and mergers would be
very rare.

48. The use of merger accounting will generally
lead to higher reported group profits and reserves
than acquisition accounting does. Therefore, it can
be said that to restrict the use of merger accounting
is income-reducing for some groups.

Practice begins as diverse (Lee, 1974), depending
on the circumstances of the company, but energy
is put into the cycle system by criticism of uncon-
trolled practices in the late 1960s, and later by
the clear legalisation of merger accounting by the
Companies Act 1981. Criticism returns after

the publication of SSAP 23 because it specifically
allows mergers to be accounted for as acquisitions;
and inventive practices can make acquisitions look
like mergers (e.g. Stacy, 1985; Cooke, 1985).

The upward force is provided by senior policy
makers supported by the DTI and by criticism
from the press and other observers. The downward
force, opposing standardisation and the control of
merger accounting, is provided by managers. The
result is another cycle, with three peaks so far, as
illustrated in Figure 4.

Goodwill

As usual, the starting point in this case is varied
practice in the late 1960s and early 1970s (e.g. Lee,
1973). The stimuli by the late 1970s were several:

(i) acknowledgement that goodwill was a
major issue of financial reporting, already
covered by US documents and an IASC
working party;
(ii) the adoption by the EC in 1978 of the
Fourth Directive, and publication of a draft
of the Seventh Directive in 1976, both con-
taining requirements on goodwill;

and a secondary wave of stimuli in the late 1980s
in the form of:

(iii) a greatly increased generation of goodwill,
due to large takeovers particularly by
brand-rich and service-based companies
(Barwise *et al.*, 1989); and
(iv) the IASC's proposal in E 32 (IASC, 1989)
to remove the opinion of immediate write-
off.

The countervailing forces are as in earlier cases: a
downward force from managers with some pro-
fessional firms supporting them, and an upward
force (in favour of standardising on an income-

Figure 4.
The Merger Accounting Cycle
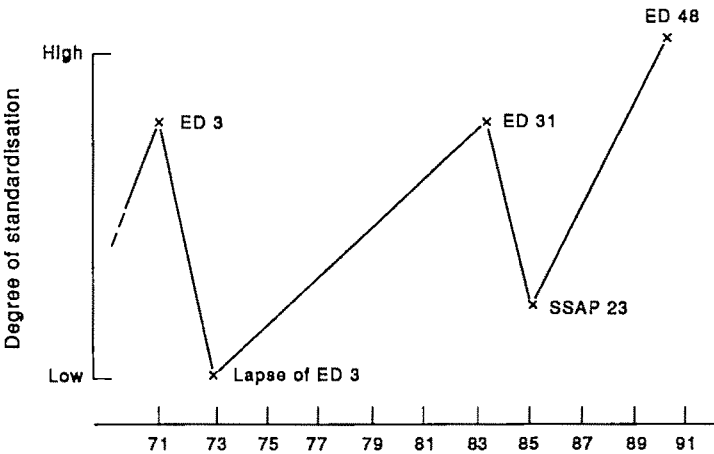
Table 2

Goodwill Highlights

Late
1960s   Varied practice.
1974   Inconclusive sub-committees of ASC.
1980   ASC Discussion Paper recommends capitalisation and amortisation over a period of up to 40 years. The majority of commentators did not support this.
1982   ED 30 allows immediate write-off to reserves or capitalisation with amortisation over up to 20 years. Companies must be consistent.
1984   SSAP 22 maintains the choice, but removes the need for consistency, removes the time limit, and 'prefers' immediate write-off.
1989   Amendments to disclosure requirements of SSAP 22.
1990   ED 47 would require capitalisation and amortisation over a period of up to 20 years, unless directors could justify a longer period of up to 40 years.

reducing practice) from senior members of the profession supported by the DTI and international influences. A complication here is that standard setters and policy choosers in the area of goodwill are clearly affected by the rules relating to other matters, particularly merger accounting and brand accounting. In the case of the exposure drafts of 1990, these issues were dealt with in context and almost exactly contemporaneously. Presumably this simultaneous attempt to tighten the rules in all three areas, blocking off means of escape, is one

of the reasons for the strength of management reaction.

The history of goodwill in the UK is long and complex, and is recorded in detail elsewhere (Nobes, 1991). The highlights are recorded in Table 2. In summary, in 1980 the ASC supported capitalisation but was gradually beaten back by the downward force, until arriving at SSAP 22, a very lax standard acceptable to management. However, stimulus to further ASC action was provided by the 'secondary wave' of stimuli noted above, and by criticism of the laxness of the standard and of the poor accountability resulting from immediate write-off of large goodwill amounts. The latter led to many groups having negative reserves or negative net assets (see Nobes, 1991). In response to this, the ASC took a fresh look at goodwill, and produced ED 47 in 1990 (see Table 2). This led to extensive criticism from the downward force of managers, supported in this case by all of the Big 6 audit firms (Hastie, 1990). The resulting cyclical pattern is illustrated in Figure 5.

Conclusion on the cyclical model

The examples in this paper have all come from the twenty-one year period of operation of the ASC in the UK. They are illustrations of the model suggested: that under certain circumstances the degree of standardisation proposed by standard setters will show a cyclical pattern. The features that cause the cyclical behaviour are:

(i)   a start point of low standardisation;
(ii) energy introduced by criticisms or economic events, international comparisons, etc;
(iii) a pro-standardisation force in the form of senior members of the profession supported by government, press and international

Figure 5.
The Goodwill Cycle
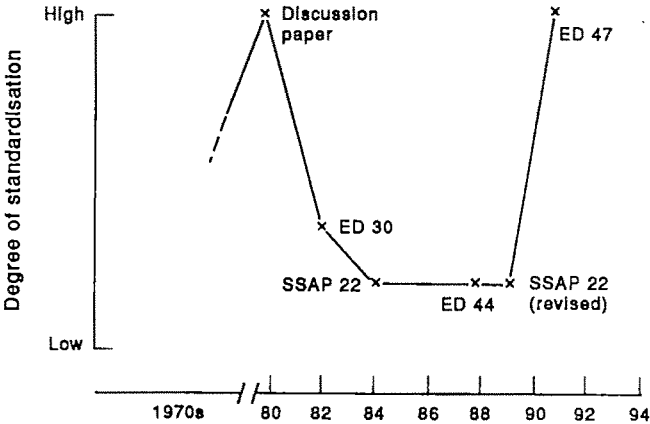
influences (the standardisation involves[9] insistence on the use of income-reducing practices under some or all circumstances);

(iv) an anti-standardisation force in the form of management, supported by some professional firms who serve them; management's motivation is in all cases to preserve flexibility and in most cases to avoid income-reducing requirements.

The explanation seems to fit five cases, and may well apply to more. In the case of goodwill it is also possible to predict that the next stage of the cycle will be a win for management in the form of a permissive standard. Indeed, it should be noted from Figures 1 to 5 that standards are generally at a lower point of standardisation than exposure drafts are.

Some unresolved questions on the cyclical model remain, as summarised below.

Alternative Explanations

Are there simpler or more elegant explanations for a cyclical pattern that are, nevertheless, convincing? One possibility might be that the points in Figures 1 to 5 are distributed randomly within a floor of no standardisation and a ceiling of full standardisation. However, inspection of the figures suggests that this is not convincing. A random degree of standardisation would not be expected to go so far up or so far down, nor to do so in stages, as often observed.

A second possibility is that the pattern is like any bargaining process, in which movement occurs as a result of argument between two parties. However, the figures do not illustrate the emergence of middle-of-the road consensuses on the issues. The cycles naturally pass through the middle from time to time, but keep on going up or down. The emergence of a standard after debate, consensus, etc. is not the end of an issue.

Thirdly, the explanation might be that the profession is cynically manipulating the whole process: pretending to be in favour of tough rules to satisfy government and public opinion, but knowing that the proposals can be watered down when the heat is off, before the promulgation of a standard. However, though standards are frequently less tough than the EDs that precede them, this is not always the case. Furthermore, detailed observation of standard setters produces no evidence of intent to arrange this.

Progress or Change

Is there no progress in the system? Are the cycles in any topic merely replications of previous cycles in that or another topic? The cyclical patterns illustrated in Figures 1 to 5 have different peaks and wavelengths and cover different total periods within the two decades. However, no progress is obvious; that is, the ASC did not seem to become more successful at resolving conflicts, discovering unique answers or imposing standard solutions. The apparent change in speed of action on certain topics over time seems to be explicable on the basis of whether resources were being tied up in other areas, e.g. in the long-running inflation accounting problem.

The membership and secretariat of the ASC and its committees changed from time to time, and a detailed examination of this might illuminate reasons for dramatic swings in the content of the ASC's documents. However, similar cyclical patterns can be found throughout the two decades, suggesting that the forces involved were more robust than individual membership of the committee. Further, the system shows no clear sign of changing over the life-cycle of the ASC. For example, it does not seem that the young ASC was naively hoping to standardise whereas the old ASC was cynically producing only placebos.

Progress may be inferred in the sense that the structure contained the seeds of its own destruction (e.g. Singleton-Green, 1990). The inability of the ASC to identify or to state or to enforce the 'right' answer on various issues led to the pressure to replace it with a body that might be better able to manage some or all of these matters.

Another potential changing element is the economic background: the state of the economy, the quantity of take-overs, the degree of inflation, etc. This might affect the amount of goodwill or deferred taxation in the accounts, or the degree of dislike of income-reduction. These factors have been mentioned in connection with each topic, under the guise of stimuli for action. However, no systematic changes in an overall factor that would affect all topics and cycles can be identified. If Figures 1 to 5 are superimposed on each other, with a common x-time-axis, no synchronisation is apparent.

Extensibility

It remains to be seen whether the dynamics of the UK system were significantly altered by the reform of standard setting in the UK in 1990. Also, it needs to be established whether a cyclical pattern can be observed in a number of major topics in other countries and, if so, whether the explanation suggested here would be appropriate elsewhere. Cycles may be less discernible where enforcement powers are stronger or where detailed conceptual frameworks are better established, which may be the case in the US, Canada and Australia. However, the downward force can always lobby government rather than the standard setters;[10] and the

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[9]This is the case for the five examples used in this paper. There may be other cases where it is not so.

[10]There are US examples of this in the cases of the investment tax credit, inflation accounting, and oil and gas.

upward force can always disagree about the exact content or application of a conceptual framwork (Dopuch and Sunder, 1980).

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Appendix I

Titles and dates of ASC documents referred to in the paper

SSAP 5	Accounting for value added tax.	1974
PSSAP 7	Accounting for changes in the purchasing power of money.	1974
SSAP 10	Statements of source and application of funds.	1975, rev. 1978
SSAP 11	Accounting for deferred tax.	1975
SSAP 13	Accounting for research and development.	1977, rev. 1989
SSAP 15	Accounting for deferred tax.	1978, rev. 1985
SSAP 16	Current cost accounting.	1980
SSAP 20	Foreign currency translation.	1983
SSAP 22	Accounting for goodwill.	1984, rev. 1989
SSAP 23	Accounting for acquisitions and mergers.	1985
ED 3	Accounting for acquisitions and mergers.	1971
ED 8	Accounting for changes in the purchasing power of money.	1973
ED 11	Accounting for deferred taxation.	1973
ED 14	Accounting for research and development.	1975
ED 17	Accounting for research and development.	1976
ED 18	Current cost accounting.	1976
ED 19	Accounting for deferred tax.	1977
ED 24	Current cost accounting.	1979
ED 30	Accounting for goodwill.	1982
ED 31	Accounting for acquisition and mergers.	1982
ED 33	Accounting for deferred tax.	1983
ED 35	Accounting for the effects of changing prices.	1984
ED 41	Accounting for research and development.	1987
ED 44	Accounting for goodwill—additional disclosures.	1988
ED 47	Accounting for goodwill.	1990
ED 48	Accounting for acquisitions and mergers.	1990

Appendix II

Explanation of scores* on _y_-axis in Figures 1 to 5

Figure 1   (i) ED 8 and PSSAP 7 required CPP accounting. This is scored less highly than ED
                 18 because ED 8 and PSSAP 7 only required supplementary statements, and
                 only from listed companies. Also CCA would give even lower profits.
             (ii) The ICAEW vote caused ED 18 to be withdrawn.
            (iii) The Hyde Guidelines, ED 24 and SSAP 16 related only to large companies,
                 whereas ED 18 would have applied to all companies. Further, the gearing
                 adjustment raised profits compared to ED 18. Also, these documents called for
                 supplementary statements only.
            (iv) ED 35 would have required just a few notes on a CCA basis.

Figure 2   (i) ED 14 would disallow capitalisation.
             (ii) ED 17 would demand capitalisation in certain circumstances, though these would
                 probably have been too vague to enforce easily.
            (iii) SSAP 13 disallows capitalisation unless certain criteria are obeyed, but there are
                 no circumstances under which it insists on capitalisation.

Figure 3   (i) ED 11 and SSAP 11 standardised on full accounting for deferred tax, but ED 11
                 required the deferral method, whereas SSAP 11 also allowed the liability
                 method.
             (ii) ED 19 and SSAP 15 appeared to require the partial allocation method, but
                 actually allowed companies to choose full allocation if they wished. ED 19
                 required the liability method, but SSAP 15 also allowed the deferral method.
            (iii) ED 33 and SSAP 15 (revised) required partial allocation. However, they are not
                 scored as high, because considerable flexibility exists in determining what is
                 foreseeable. ED 33 allowed both the liability and the deferral method, but
                 SSAP 15 (revised) continued the rising cycle of standardisation by requiring the
                 liability method.

Figure 4   (i) ED 3 and ED 31 would demand standardisation, but with easily manipulable
                 rules.
             (ii) The lapse of ED 3 is scored as zero. There was a view that the law might disallow
                 merger accounting, but some companies nevertheless followed that practice.
            (iii) SSAP 23 does seek to control the use of merger accounting, though not of
                 acquisition accounting. However, again the rules can be manipulated.
            (iv) ED 48 appears to be as close as can be obtained to effective standardisation; and
                 it restricts the use of merger accounting substantially.

Figure 5   (i) The discussion paper and ED 47 would demand amortisation.
             (ii) ED 30 would allow a choice of methods but insist that any company be consistent.
            (iii) SSAP 22 allowed inconsistency, but (like ED 30) did not allow inherent goodwill
                 to be capitalised, nor did it allow goodwill to be left permanently at cost, nor
                 the use of a mixture of methods for the same acquisition. Therefore, it does not
                 score zero.

  *These scores are, of course, subjective. However, the precise location of the points in the figures
is not important. Similar cycles would emerge with other reasonable scorings.

A Framework for Evaluating Process Quality for Audit Engagements

Steve G. Sutton and James C. Lampe*

Abstract—Audit quality has been researched from several perspectives. Most recent research has been oriented toward end user surrogates for audit quality. This study, on the other hand, focuses on the development of a more objective and comprehensive measure of audit quality based on an evaluation of the actual audit processes completed for a unique engagement. To achieve this objective, over 200 audit practitioners participated in a series of structured group processes designed to elicit group consensus, first on the factors affecting audit process quality and subsequently on objective measures of deviations in each of the identified factors. A separate group of approximately 100 practitioners provided relative weights for each identified factor's effect on overall audit quality. The combination of measures and corresponding weighting factors is used as the foundation for a comprehensive framework for evaluating audit process quality.

Audit quality is a multi-faceted concept that is of concern to diverse participants in the audit process. Some of the different participants in the audit process hold differing and even conflicting perceptions of what constitutes a high quality audit engagement. Stockholders assess audit quality differently from creditors, while virtually all third party users will perceive quality differently from the management responsible for preparation of the financial statements. Within the audit profession, a peer review team may view the quality of an engagement differently from the firm performing the audit. Furthermore, staff members executing day-to-day procedures may hold perceptions of quality that differ significantly from those of the partner in charge of the engagement.

This research project was initiated on the premise that the auditors in charge of the day-to-day engagement activities possess similar beliefs concerning factors that differentiate quality between audits. It has been concluded that data collected subsequently supports this premise and provides the basis for further supposition that formal recognition and modelling of factors identified by practising auditors is a means for objectively and comprehensively measuring audit engagement quality. Specific components for a quantitative audit engagement quality model have been derived from the opinions of over 200 experi-

enced auditors. These auditors were placed in sub-groups to participate in structured group processes designed to elicit consensus on factors affecting audit quality, measures of those factors, and the relative importance of each factor.

The combination of identified quality factors with relative weights or importance of each factor, and measures for each factor, results in a quantitative model of audit engagement quality (AEQ). In some firms it may be feasible to adopt most of the quantitative attributes of the model while other firms may find it desirable to consider quantitatively only a few of the quality factors identified by the model. In either of these extremes, a major benefit is obtained if auditors are better able to distinguish variations in audit service quality because a larger and more comprehensive set of variables are objectively compared between engagements.

Perceptions of audit quality

Five major groups of participants are directly concerned with the quality of audits of financial statements for publicly held UK companies:

(1) preparers of the financial statements including top management, accounting staff and audit committee;
(2) external users of the financial statements including current and potential investors and creditors;
(3) regulators of public interest including the high courts, legislative committees and revenue authorities;
(4) members of the accounting and auditing profession including the three Institutes of Chartered Accountants, the Chartered

Association of Certified Accountants, and committees such as the Accounting Standards Board (ASB) and the Auditing Practices Board (APB); and

(5) members of the responsible accounting firm including engagement team members performing the audit and other management level personnel.

The above listing is not exhaustive, but is intended to be illustrative of numerous subsets of multiple categories of audit market participants all possessing different perceptions of audit quality. For example, not only are members of the audit firm likely to view audit quality differently from management responsible for preparation of the financial statements, but partners within the audit firm do not perceive quality identically to the staff on the audit team.

Approaches to Quality Measurement

All five of the participant groups identified, however, share a common desire to achieve quality audits. An immediate barrier to the common goal is that some of the participating groups have conflicting motivations as well as differing perceptions in an assessment of audit quality. Service quality research performed outside the area of auditing provides some direction for this problem.

Most of the published research on process quality has been performed in the area of manufacturing production with some direct extensions into service industries. When measuring the quality of a manufactured commercial product it is commonly recognised that the ultimate measure of quality is customer utilisation. If a paying customer purchases and uses a product, quality is adequate even if distinct variations in product quality are observed. This approach to product quality based on end-customer expectations contains the same perception problems as those described for different users of the audit process. In order to circumvent this, production quality literature typically concentrates on more objective quantitative measures of the production process used as an intermediate indicator of the ultimate customer utilisation measure (cf. Adam *et al.*, 1981; Van de Ven and Ferry, 1981; and Tuttle, 1982). Such measures adapted for assessing audit service quality can be dichotomised as:

(1) Process measures which concentrate on the work performed in the audit process and how well it compares with established service criteria in the form of professional standards.

(2) Outcome measures which concentrate on the amount of increased confidence (value) felt by users of the audited financial statements as a result of the auditor's report.

Existing Measures of Audit Quality

In a review of published literature on audit quality, it becomes apparent that both process and outcome measures have been applied to specific engagements. The use of surrogates for audit quality measurement is recognised as a distinct subset of outcome measures. Investors and creditors generally rely on surrogates developed from experience in order to evaluate audit quality (Moizer, 1986; Shaked and Sutton, 1982; Barzel, 1982). One of the quality surrogates supported by empirical study has been firm size as defined by number of professional staff, size of clients, number of clients in an industry, and amount of fees charged (Palmrose, 1986; Francis and Simon, 1987; Danos and Eichenseher, 1986; and Nichols and Smith, 1983). Other research has found that bankers and underwriters typically use 'Big Eight' audit firms as a surrogate for higher audit quality (Arnett and Danos, 1979; Shockley and Holt, 1983). Intensified litigation against the auditing profession has been interpreted as a signal that users' expectations of audit quality go beyond attestation and extend to a guarantee of a company's financial condition (Page and Hopwood, 1986).

One reason posited for third party use of surrogates for audit quality is the inability directly to observe and communicate with the auditors. In contrast, the preparer group via an audit committee or its equivalent is responsible for hiring, firing and acting as auditor/auditee liaison during the planning, execution and completion phases of an audit. Management and accounting staff personnel must necessarily interact with the auditors during the fieldwork phases of an engagement. Although the preparers (auditees) have the ability directly to observe and interact while a given level of quality is attained during the audit process, empirical evidence indicates that many audit committe members and management personnel also use firm size as a surrogate for audit quality (Schroeder *et al.*, 1986). The other frequently used measures of audit quality mentioned by members of audit committees are subjective characteristics of the audit team.

Other examples of third party assessments of audit quality often include both process and outcome measures. For example, when audit committees and client management meet with auditors to discuss audit planning or results, the evaluation of performance is a process measure. Alternatively, when legislative committees or high court decisions emphasise the negative effects of 'audit failures' the conclusion is an obvious outcome measure.

Auditors' Perceptions of Quality

The accounting and auditing profession has historically demonstrated emphasis on the quality

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of audits via methods such as stringent entrance requirements, education minimums, standard setting, rules of ethics, licensing procedures, and the establishment of numerous committees and task force groups to study and recommend quality improvements. Proposals to restructure the profession in the United States were generated by such committees in 1988 and were approved by the overwhelming majority of members in the American Institute of Certified Public Accountants. In the UK, auditing structure was created by Section 161 of the Companies Act of 1948. A key characteristic of the UK audit services market is regulation via accounting and auditing standards, promulgated now via the ASB and APB. Additional indicators of broad professional self-regulation of audit service quality are Statements on Auditing generated by the CCAB and ethical guidelines with associated disciplinary procedures adopted by individual professional bodies. The importance of published standards with minimum audit service quality guidelines has been illustrated in the Lloyd Cheyham v. Littlejohn & Co. case (1985). In this case the high court judge stated that adherence to published standards, whilst not conclusive, is defence against charges of a negligent audit (Woolf, 1986).

Academic members of the profession have performed research on conflicting pressures for audit team members that may affect audit quality. All of the previously discussed participants in the audit process have interaction with the auditors and are expected to exert pressure on the auditor. Conflicting goals of the preparers v. the users v. public interest groups (Shockley, 1981), and price cutting (Francis and Simon, 1987; Simon and Francis, 1988) have all been hypothesised to affect audit quality as well as the standards set by the profession. In addition to external pressures on audit quality, it has also been concluded that the method of internal performance evaluation directly influences the audit team effort expended on the tasks considered to affect the quality of the audit process (Jiambalvo, 1979).

Beyond individual audit team members' performance, the judgement of partners and managers is also affected by the absence of audit quality performance measures. Partners and managers generally base their decisions on the detail of an audit as provided by the related working papers—generally without the availability of objective measures of the quality of the process performed. The working papers may not, in and of themselves, be sufficient for partners and managers to make adequate audit judgements.

The perceptions of audit quality and brief review of literature covered in the preceding paragraphs are not intended to be comprehensive but rather a recognition of research that has not focussed directly on the team members performing the actual audit procedures. Prior production management research (Adam *et al.*, 1986) has placed emphasis on potential improvements in service quality when the attitudes and activities of day-to-day workers are studied. In auditing, most of the prior research concerning on-the-job measures of quality has investigated time budgets and staff evaluations.

Time Budgets and Staff Evaluations

Anecdotal evidence provided via discussions with partner level practitioners indicates that a significant portion of the audit quality assessment for a specific engagement is based on subjective and unrecorded evaluations. A problem is generated, however, when non-specific and subjective quality evaluators are combined with quantitative measures such as time budgets and staff evaluation forms. When a process measure is also used as an evaluation of the audit team, then the effort expended by the team will be modified (Jiambalvo, 1979; Nash and Carroll, 1975; and Cummings and Schwab, 1973). When a specific objective quality measure is also perceived by audit team members as a performance evaluator, it may serve as a means of misdirecting effort if the evaluation stresses a single or a group of quality dimensions over the total set considered most appropriate for the audit engagement. For example, overemphasis of a time budget may direct audit team efforts to the detriment of total audit quality (Adam *et al.*, 1986). More specific research on time budgets and staff evaluations has added credence to this problem.

The use of a time budget by management is a quantitative communication of what constitutes successful work performance in management's view. Implicit in the presentation of a time budget is the promise of rewards for the subject if the budget is attained. The budget communication represents a specification of potential levels of reward attainment associated with work-goal accomplishment (Ronen and Livingstone, 1975). Staff evaluations similarly provide the members of an audit team with continual reinforcement of management's objectives. Each evaluation allows audit team members to re-evaluate the set of possible work behaviours and each alternative's perceived likelihood of obtaining rewards for successful completion of alternative tasks within the audit process. The supervisor (evaluator), at least in part, determines which associated work behaviours receive rewards (House, 1971).

If individuals perceive that a given behaviour is considered important to performance evaluators, they will utilise that path by directing their efforts toward effective performance on that given dimension. The evaluation of a given dimension makes that attribute a path towards rewards—it provides a link between the effort extended toward the given dimension and rewards (Jiambalvo, 1979; Cum-

mings and Schwab, 1973; and Nash and Carroll, 1975).

If supervisors overly stress the time dimension, whether intentionally or unintentionally, the risks of misdirecting the efforts of the audit team members from other important tasks are increased substantially. This behaviour was evident in a study by the Commission on Auditor Responsibilities (AICPA, 1978) which found that 58% of respondents indicated that at some time they had accepted questionable accounts and proceeded with the remainder of an audit in an effort to minimise time budget variances. The two primary objective measures used in most audits (time budget analysis and billing of fees) are time based. Individual audit team members perceiving time-based performance as the primary means of receiving rewards will place a high probability on a positive relationship between time budget completion and receipts of rewards while assigning less likelihood of qualitative evaluations yielding rewards for performance quality.

AEQ model development

The previous section indicated that both process measures and outcome measures, including surrogate measures, are used by different participants in the audit process. Furthermore, overemphasis of a single subset of audit quality may misdirect audit team effort to the detriment of total engagement quality. To the extent that a comprehensive and objective model of audit engagement quality (AEQ) can be developed, the auditors involved in the day-to-day processes of auditing can better understand and control the key variables identified in the model.

Quality Model Characteristics

The total audit engagement comprises a myriad of procedures performed by numerous members of a team over an extended period. There is similarly a wide array of factors that can affect the quality of the procedures performed and, hence, the ultimate AEQ. Some factors positively influence quality while others exert negative influence. In order to develop a quantitative AEQ model it is necessary to segment the total audit engagement into smaller more specifically defined operations and to identify the key factors affecting quality within each operation. A second and equally important aspect of a quantitative AEQ model is that objective quantitative measures of positive or negative variation must be defined for each key quality factor. This model can be formlated as:

$$AEQ = \Sigma[QFI_i(\Sigma(P_j * MR_j))]$$

where:

AEQ = audit engagement quality.

QFI_i = quality factor importance—the relative degree to which the factor affects total engagement quality.

P_j = probability—that a specific measure properly reflects the quality of work performance.

MR_j = measure relevance—the extent to which the measure directly relates to the variation in the identified quality factor.

The degree to which the motivation model comprehensively measures AEQ is dependent on two critical functions—(1) the identification of key quality factors that most directly affect procedures in all of the segmented operations of the audit process, and (2) the generation of measures that properly reflect variation in each identified quality factor.

The number of quality factors must be large enough to be generally agreed upon as capable of distinguishing quality between most audit engagements but small enough for reasonable model manipulation. The measures generated for the comprehensive set of quality factors must first be able to distinguish quantitatively between high and low levels of performance and should be perceived by members of the audit team as objective and reliable indicators. The generation of these model components is an obvious first step of model development.

Model Component Generation

The identification of quality factors and generation of associated measures for the current AEQ model have been accomplished via structured group processes in three distinct phases. In Phase I a small group (Group I) consisting of a single audit team (seven members) participated in all six sessions (Table 1) designed to generate, clarify and evaluate the quality factors and associated measures needed to develop the AEQ model. In Phase II a larger group (Group II) of experienced auditors replicated the third and fourth sessions to provide validation of the key quality factors associated measures. Phase III involved a third large group (Group III) of auditors to provide validation and evaluation of the unified set of key quality factors and associated measures generated in the first two phases of structured group processes. The remainder of this section provides more detailed discussion of how the factors and measures were initially generated and subsequently refined with ultimate selection of the few key components for model development.

Structured Group Processes

Although most prior research on process quality has focused on physical production systems, methodologies for generating quality control systems for service industries have recently been developed

and validated. Prior quality control research in service industries (including auditing) has applied structured group processes (Adam *et al.*, 1986; Aubrey and Eldridge, 1981; Sutton and Lampe, 1989; Theby, 1981; and Hershauer *et al.*, 1984) designed to involve the people that deal with the targeted process on a daily basis. These people can provide insight into both strengths and weaknesses in the service process and ultimately can determine the quality level at which tasks are performed. The structured group processes have been used with input from lower level staff, in selected service organisations, to create productivity management systems suited to specific circumstances rather than traditional measures (Sink, 1983 and 1985). The initial application of structured group processes requires five days of meetings (consisting of six sessions) over an approximate two week period. A summary of processes, techniques and identified components is presented in Table 1.

Variations of the structured group processes have been applied with three different groups of practising auditors. The first group (Group I) represents a single audit team comprising a partner, a senior manager, a manager, two seniors and two staff from an office of an international accounting firm (Firm A). The total team of seven is also subdivided as a partner-manager subset of three and a senior-staff subset of four. Group I actively participated in all six sessions as summarised in Table 1. Results obtained from the total process as applied with Group I served as the basis for replication, validation and refinement of specific subsets of the processes involving larger numbers of participating auditors in the second and third groups.

The second group (Group II) includes a total of 145 audit seniors employed by multiple offices of a second international accounting firm (Firm B). The primary functions performed by Group II include replication, validation and refinement of steps 2 through 5—generation of the audit quality factors and specific measures for each of the identified factors. The third group of participants (Group III) includes 99 managers from multiple offices of Firm A. The primary functions completed by Group III includes validation and refinement of quality factor evaluations (step 6). More detailed discussion of the model component generation process follows.

The initial structured group session facilitates development of system boundaries for the project (including horizontal and vertical). The horizontal boundaries determine where in the total audit process to begin and end generation of audit quality process measures. The vertical boundaries identify the personnel involved in the related audit tasks. Horizontal boundaries were set by Group I as beginning after the engagement has been secured but prior to the development of the audit plan; and

ending with the issue of the audit reports and billing for services rendered. Vertical boundaries included all members of the audit team directly involved in the audit process. Discussion with the larger set of Group II auditors confirmed that the agreed upon boundaries constitute the critical parts of the audit process as regards audit quality.

The second session determines unit operations. To verify that a suggested unit operation meets the definitional attributes, each unit operation recommended by a group member is examined for purposes of identifying the definable inputs and outputs. The existence of a state change in the inputs is reviewed to determine if a major change is executed.[1] The process continues until all members arrive at a consensus on one set of unit operations.

The senior-staff sub-group from the audit team identified four unit operations which comprehensively include all audit activities within the horizontal boundaries provided: (1) engagement planning, (2) interim fieldwork, (3) year-end fieldwork, and (4) final administration. These four unit operations are considered the lowest level of segmentation that can be obtained while maintaining a series system (i.e. one unit operation should be completed prior to the next beginning, with the subsequent operation using the output of the prior operation). As with step one, discussions with auditors from Group II confirmed the designated unit operations, although there are conceptual differences on whether two of the unit operations— interim and year-end fieldwork—comprise distinct processes.[2] In order to enhance external validity and applicability of the audit quality model, the final model will combine interim and year-end fieldwork into a single unit, fieldwork. The combination of the two units does not affect variables for the model. Every quality factor for interim fieldwork is also included in year-end. The development of system boundaries and unit operations provide the framework to examine further the audit process.

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[1] A unit operation denotes a major change in overall throughput as opposed to tasks which are completed but do not really change the overall throughput themselves. Tasks would include, for example, analytical review and confirmations. While these tasks are essential in most audits and provide specific evidence, neither task of itself results in a significant change in the overall audit throughput.

[2] The differences in the distinction between interim and year-end fieldwork were encountered because the second firm does not formally differentiate between interim and year-end work. Both firms conduct what constitutes interim and year-end fieldwork but Firm B does not differentiate the two with a formal output from interim fieldwork which serves as input for year-end fieldwork. Although some members of the audit senior group (Firm B) opposed the dichotomy of fieldwork into year-end and interim fieldwork, the group agreed it existed in practice and was reasonable within the context of the study.

Table 1
Summary of the Structured Group Processes

Session	Process	Sub-Group	Technique	Description
1	Definition of system boundaries	A	—Group consensus	*Horizontal boundaries* identify the segment of the audit process where factors affecting audit quality are likely to occur. *Vertical boundaries* specify which personnel significantly influence quality of audit work performed.
2	Determination of unit operations	B	—Group consensus	*Unit operations* are any phase in the process where a definable input enters the segment, a state change occurs during throughput of the process, and a definable output exits the process.
3	Generation of audit quality factors	B	—Structured brainstorming —Q-methodology	*Audit quality factors* represent the variables in the audit process affecting the relationship between auditor effort and attainment of audit objectives.
4	Generation of measures for audit quality factors	A, B	—Structured brainstorming	
5	Clarification of generated measures	A	—Group consensus	
6	Evaluation of measures and determination of factor weightings	A	—Individual ratings —Magnitude measurement	

A = meeting for partner/manager group.
B = meeting for senior/staff group.

The first component necessary in building a usable AEQ model is a set of key audit quality factors. Audit quality factors are deviations in the audit process which affect the relationship between auditor effort and attainment of audit objectives (work-goal accomplishment). It should be noted that these factors can be either auditor or client induced changes that, in either case, should be monitored for their potential effect on audit process quality. In the AEQ model, these factors affect all major fluctuations in the P_jMR_j term.

The goal of the third session is to accomplish identification of quality factors. After jointly generating and clarifying a comprehensive list of factors, group members are instructed to prepare a separate list of all the generated deviations they feel are critical to the auditors' ability to complete the audit process. Each individual then ranks, by potential impact on quality, the factors they have selected as critical.[3] These rankings are subsequently aggregated to determine the key audit quality factors.

During the fourth session, the entire audit team generates a set of potential quality measures for each of the identified audit quality factors. The generation of measures for each key quality factor uses the same structured brainstorming technique applied to generation of audit quality factors. Evaluation of the measures is completed at a subsequent meeting.

The next session is intended to maximise the clarity, usefulness and feasibility of the audit quality measures. Emphasis is placed on developing ratio based measures as a means of avoiding potentially subjective indicators and/or measures that would be affected by client size. The ratio measures should optimally be developed using a denominator which eliminates the effects of specific auditee attributes (e.g. size, revenue etc.). The partner-manager group discusses each of the measures, arriving at a consensus wording for each.

The sixth and final session is held to evaluate the measures. The quantified change in the 'ith' quality factor is reflected in the AEQ model by a corresponding instance of the $\Sigma(P_jMR_j)$ term. The measure evaluation approach was, therefore, broken into two parts to isolate the P_j and MR_j terms of an individual measure (the summation results from n individual measures). For the participants, P_j and MR_j were described respectively as: (1) the

confidence[4] the evaluator has that the data for a given measure could be collected, and (2) the perceived strength[5] of the measure in accurately capturing the deviation in the given audit quality factor.[6] Confidence (P_j) is measured using a continuous scale from 0–100%. To avoid a biasing effect by the confidence response, a seven point Likert type scale is used to evaluate the strength variable (MR_j), with verbal anchors of:

0—not applicable to the quality factor
2—limited usefulness as a measure of quality
4—useful measure of quality
6—very strong measure of quality
    (1, 3 and 5 are intermediary ratings).

After evaluating the sets of measures for the selected audit quality factors, each group member is instructed to weight the potential impact of each quality factor on overall audit quality.[7] The determination of a weighting factor provides an operationalisation of the QFI_i term in the AEQ model. This is completed by using a magnitude measurement scale which is designed to elicit the relative impact. To facilitate the magnitude measurement process, one factor is selected for its ease of understandability and its expected average relative impact and it is assigned a value of 100. This factor is then used as a benchmark from which to evaluate the remaining factors. For this study, client preparedness has been selected as the benchmark quality for relative evaluation of all other factors. If another factor was perceived to be three times as important as the benchmark factor, a value of 300

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[3]The process applied here is an application of a Q-methodology technique. This technique uses Q-sorts to divide a group of stimuli into categories. In this particular application, participants took the list of audit quality factors and divided the cues into two stacks—critical versus non-critical factors. The critical factors were then separated into stacks using the extreme form of a Q-sort where each stack consists of one item—i.e. a ranking process. Q-methodology is discussed in greater detail in Kerlinger (1973).

[4]Confidence was defined in the instructions to the questionnaire as: '*CONFIDENCE*: The confidence in a measure relates to the reliability of the potential measure including (1) the *precision* of the measure, (2) the *objectivity* of the measure, and (3) the *feasibility* of data collection for the measure. Please enter your overall confidence in the quality measure on a scale of 0–100'.

[5]Strength was defined in the instructions to the participants as: '*STRENGTH*: This response is designed to rate the relevancy and meaningfulness of the potential measure in measuring the particular audit quality factor. Please assume for this response, all necessary data for the given measure are available. A numeric response between *0–6* should be entered with a *0* representing a measure that is not applicable to the given factor and *6* being a very strong quality measure'.

[6]The use of the two vector scale was developed and tested by Adam *et al.* (1986). The confidence scale was modified in this study from a Likert type scale to a 0–100% continuum to remove a potential biasing effect in rating the two attributes for each measure with the same scale. While the validation of use of the product of the two dimensions was performed by Adam *et al.* (1986) using two ordinal scales, the use of an ordinal scale and a notionally ratio scale in combination should be at least equally valid.

[7]A definition for audit quality was intentionally omitted during the course of the structured group processes. The intention was to elicit the participants' views as to what construed audit quality and, as Schroeder *et al.* (1986) noted, '[s]ince there is no general understanding of what constitutes audit quality, the provision of such a definition could have created serious demand effects'.

(3×100) would be assigned. On the other hand, if a third factor being rated was perceived to be only half as important to overall audit quality as the benchmark, then the factor would be assigned a value of 50. The geometric mean is subsequently used to aggregate the responses into one weighting factor (Howard, 1981; Howard and Nikolai, 1983; and Sutton and Lampe, 1989).

Validation and Refinement of Quality Factors and Measures

Because of the consequence of generating and selecting key audit quality factors, Group II participated in a replication of session three of the structured group processes. The Q-Methodology process used with Group I produced a list of 66 potential factors from which 19 key quality factors were selected as comprehensively capturing deviation in audit process quality across total audit engagements. Replication of the process with a subset of 45 auditors from Group II generated a similarly lengthy list of potential quality factors. Independent application of Q-Methodology to the separately generated list of factors again resulted in a list of 19 key factors considered to indicate comprehensively audit process quality. Twelve of the 19 key factors generated independently by Group II were considered identical to those selected by Group I. The remaining factors on each of the two lists, although not identical, were quite similar. A chi-square analysis, completed to test the agreement between the two independent group selections, yielded a value of 26.518 with a p-value of less than 0.001. Subject to the limitations of small group experiments, these results provide a basis for concluding that auditors in charge of the day-to-day process of audit engagements can agree on a limited number of quality factors which comprehensively account for the deviations in quality between audit engagements. The validated set of key audit quality factors is listed in Table 2.

To generate measures for the deviation in each identified key quality factor, the full audit team from Firm A completed applicable structured group processes similar to those used for generation of the quality factors. After generating numerous potential measures, the partner-manager sub-group edited the list. The edit process entailed clarification of the generated measures and deletion of measures considered of little or no value. The edited list of measures developed by the Firm A group included 171 possible measures for the 19 audit quality factors.

In an effort to disclose any key measures that may have been omitted during generation by Group I, the measure generation process was replicated using two subsets of auditors (total of 100 participants) from Group II. Each reiteration of the process involved completing the same measure generation process as the initial team. Subsequent to independent generation of measures, the Group II participants received the list of 171 measures generated by Group I. Following analysis and reconciliation with the Firm A list, Group II selected only two additional measures (total of 173) for inclusion in the measure evaluation phase.

The partner-manager subset from Group I completed the measure evaluation phase. Their completion (along with evaluations completed by two audit managers from different offices of Firm A) were used to pre-test the evaluation process for

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Table 2
Selected Key Quality Factors

Unit Operation	Key Quality Factor
Engagement planning	Changes in client (P1)
	Timing of planning (P2)
	Risk assessment (P3)
Fieldwork	Understanding of client systems (F1)
	Client competence (F2)
	Quality of programs/planning memos (F3)
	Client preparedness (F4)
	Audit team expertise (F5)
	Completion of interim before year-end (F6)
	Completion of working papers (F7)
	Unusual items (F8)
	Client rapport (F9)
	Thoroughness of review process (F10)
	Availability of firm-wide resources (F11)
	Budgetary constraints (F12)
Final administration	Client reaction (A1)
	Timing and quality of staff evaluations (A2)
	Billing of fees (A3)
	Time budget analysis (A4)

listed potential measures. A total of 99 audit managers representing 42.3% of the managers in 11 offices[8] of Firm A subsequently completed the refined instrument designed to evaluate the combined list of 173 quality measures generated by Groups I and II. More specifically, the instrument was used to elicit audit manager perceptions as to the ability of each measure to reflect accurately and consistently the deviation in the respective audit quality factor.

In addition to rating the identified measures, this phase of the study also served to limit the number of measures selected for inclusion in the audit quality model. From a practical perspective, a model with a small set of effective quality measures is preferable to one with a large set of measures. A major objective of the evaluation process, therefore, is to identify the best measure for each factor. In terms of the AEQ model, the objective is to maximise the P_jMR_j term. If each measure in the set of best measures is found to have strong efficacy (high P_jMR_j value), then only the 19 measures representing the highest rated measure for each factor may be integrated into the audit quality model and still accurately reflect quality deviation in the comprehensive set of quality factors. The higher the efficacy of the measures, the higher the positive motivating force towards quality (a desired objective).

A strength (MR_j) rating of 3 within the previously described Likert scale is an unanchored response representing an intermediary response between 'limited relevancy and meaningfulness' (rating of 2) and 'relevant and meaningful' (rating of 4). The rating of 3 implies that the measure has reasonable relevance and meaningfulness. In evaluating the confidence (P_j), a rating equal to or greater than 75% is viewed as representing a high probability of success. If an effective measure is viewed as having a strength rating of at least 3 and a minimum confidence rating of 75% then, based on the underlying expectancy theory, an efficacy rating of $P_jMR_j \geqslant 2.25$ (3×0.75) can be established as the cut-off for an effective measure. This cut-off has been established solely as a reference point from which initially to evaluate the set of available measures.

Based on the established cut-off, 62 of the 173 measures evaluated were rated as effective. Mean scores for the highest rated measure of each audit quality factor exceeded the cut-off for 16 of the 19 factors. The three remaining deviations all had ratings exceeding 2.00. The measure with the highest P_jMR_j value for each audit quality factor is shown in Table 3.

The measure efficacy results provide for additional simplification in the AEQ model. Because objective measures of the deviation in the applicable audit quality factor have been found for each of the 19 factors, a model using only the highest rated measures can be relied upon to capture much of the deviation in each audit quality factor. As a result of the simplification, the P_iMR_i term is reduced to MF_j. By limiting $n = 1$, $\Sigma[P_j * MR_j]$ becomes MF_i (where MF_i is the measure of the deviation in the 'ith' quality factor). The model is therefore restated as:

$$AEQ = \Sigma[QFI_i * MF_i]$$

In the AEQ model as stated, the MF_i measures must be standardised to a common set of values. This standardisation process would require empirical examination of each measure's range and distribution which would provide the necessary parameters for normalisation. If raw measures with varying distributions and ranges were simply combined, the relative weights assigned to each quality factor would be distorted. With a standardised set of best measures for each of the 19 quality factors, appropriate weights are assigned to each factor and applied consistently across multiple engagements.

Validation and Refinement of Quality Factor Weightings

The remaining component of the AEQ model requiring quantification is the QFI_i (quality factor importance) term. The QFI_i represents a relative impact measure of the effect of one quality factor versus others on overall audit quality. The QFI_i can, therefore, be operationalised as a weighting factor. To ascertain appropriate weightings, attitudes of 99 audit managers (Group III) concerning the 19 key quality factors have been collected via a magnitude measurement questionnaire.

The geometric means for each of the audit quality factors have been calculated using a logarithmic transformation (Snedecor and Cochran, 1980). Each response was converted to its log. The means of the logs of the responses were then calculated and subsequently transformed back by taking the antilog to get the geometric means. The geometric means for the 19 quality factors are presented in Table 4.

The geometric means provide the basis for determining the weighting factors (QFI_i values) to be assigned to each selected audit quality factor. To facilitate integration of the weighting factors into the AEQ model, the geometric means were transformed into percentages of the total weights generated (Table 4). This transformation essentially represented the percentage of the total influence on overall audit quality that can be attributed to the

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[8] Participating offices were from 11 geographically dispersed offices in the US: Atlanta, Boston, Chicago, Cleveland, Dallas, Denver, Houston, Milwaukee, Philadelphia, Pittsburgh and St. Louis.

Table 3
Highest Rated Measures for Each Quality Factor

Quality Factor	Quality Measure	Mean Score
P1	no. of new subsidiaries and/or divisions / total number of subsidiaries	2.94
P2	% of plan completed prior to first day of fieldwork	3.14
P3	no. of high risk audit areas / total number of audit areas assessed	2.77
F1	use of Likert type scale to rate the audit team's understanding of client	2.02
F2	% of clients' accounts requiring year-end audit adjustment	2.66
F3	% of total engagement hours spent on programme and planning memo generation	2.27
F4	% of requested schedules completed by client	3.31
F5	average number of months on client per audit team senior	3.42
F6	% of senior's review completed prior to start of year-end work	2.79
F7	% of working papers approved by senior prior to opinion date	3.59
F8	use of Likert type scale to rate the defensibility of position on final resolution of unusual items	2.15
F9	no. of years involved with client	3.24
F10	% of work reviewed by senior prior to opinion date	3.97
F11	% of tax assistance hours performed by tax staff having prior experience with client	2.35
F12	no. of days between closing (or year-end) and opinion date	2.82
A1	% of prior system and control recommendations subsequently instituted by client	2.09
A2	average no. of days from time audit team members leave engagement to receiving evolutions	2.41
A3	dollar amount of service value adjustment / budgeted amount of service value adjustment	2.71
A4	% of total hours of budget variations that are not explained	2.53

given factor. The QFI$_i$ values were calculated as follows:

$$QFI_i = \frac{\text{geometric mean of weighting for } MF_i}{\text{sum of the geometric means for all } MF_i}$$

Each individually calculated percentage of total weights represents the QFI$_i$ value linked to the respective audit quality factor (MF$_i$) for insertion in the final AEQ model. The coefficient allows for the fact that different audit quality factors have varying effects on overall audit quality.

The resulting audit quality model

The previous sections provide an overview of structured group processes used to generate, replicate, validate and refine the components necessary to operationalise the audit engagement quality model adapted from expectancy theory. It should be noted that the AEQ model has been simplified to incorporate only one best measure for each of 19 selected key quality factors. In general form the simplified model has been restated quantitatively as:

$$AEQ = \Sigma[QFI_i * MF_i]$$

When applied to numerous audit engagements, the AEQ model will provide an objective and comprehensive measure that indicates relative quality between the engagements. There was an exceptionally strong consensus between auditors who provided the 19 quality factors, the associated best measures, and the relative quality factor weightings. This adds credibility to the original premise that practis-

Table 4
Weighting Coefficients for Selected Quality Factors

Key Factor		Geometric Mean	Percent Total Weights
Engagement Planning:			
(P1)	Changes in client	81.8	0.045
(P2)	Timing of planning	93.3	0.051
(P3)	Risk assessment	133.4	0.073
Fieldwork:			
(F1)	Understanding of client systems	152.6	0.084
(F2)	Client competence	116.5	0.064
(F3)	Planning memos/programs	123.5	0.068
(F4)	Client preparedness	100.0	0.055
(F5)	Staff expertise	152.7	0.084
(F6)	Completion of interim before year-end	61.6	0.034
(F7)	Completion of working papers	134.6	0.074
(F8)	Unusual items	83.2	0.046
(F9)	Client rapport	102.6	0.057
(F10)	Thoroughness of review process	152.2	0.084
(F11)	Availability of total firm resources	78.9	0.043
(F12)	Timing constraints	103.1	0.057
Final Administration:			
(A1)	Client reaction	41.1	0.023
(A2)	Timing and thoroughness of staff evaluators	31.9	0.018
(A3)	Billing of fees	27.5	0.015
(A4)	Time budget analysis	44.9	0.025

ing auditors in charge of day-to-day audit process activities can identify a set of factors throughout the multiple stage audit process that are generally agreed upon as affecting engagement quality. The resulting model cannot, however, be considered an all inclusive definition of audit quality. The primary contribution of the AEQ model is that expansion of the 19 measures spanning all unit operations (processes) of an audit engagement does not permit overemphasis of a single dimension, but rather directs audit team members toward quality performance over a broad range of tasks identified as the key indicators of total engagement quality.

It may be recalled that the 19 identified quality factors (Table 2) include three factors for the planning phase of the engagement, twelve factors for the fieldwork phase, and four factors for the final administration and reporting activities during the completion phase of an audit. In this context the model is viewed as:

AEQ = Σ(planning quality factors * planning factor measures)
  + Σ(fieldwork quality factors * fieldwork factor measures)
  + Σ(administration quality factors * administration factor measures).

To the extent that the weightings of quality factor importance are representative across many different audit engagements, these weightings can

be held constant in applying the model to different audit engagements. Collection of data is necessary on each unique engagement in order to compute the 19 measures of quality deviation in each of the quality factors. When the 19 engagement specific measures are combined with the 19 constant quality factor weightings, the result is an objective and comprehensive single measure of the audit process quality. If variable representations for each of the engagement specific quality measures are:

MP1–MP3   measures for planning phase quality factors,

MF1–MF12   measures for fieldwork phase quality factors,

MA1–MA4   measures for administration phase quality factors

then the constant factor weightings can be combined with the variable measures and restated in the final model form:

AEQ = [0.045 (MP1) + 0.051 (MP2)
  + 0.073 (MP3) + 0.084 (MF1)
  + 0.064 (MF2) + 0.068 (MF3)
  + 0.055 (MF4) + 0.084 (MF5)
  + 0.034 (MF6) + 0.074 (MF7)
  + 0.046 (MF8) + 0.057 (MF9)
  + 0.084 (MF10) + 0.043 (MF11)
  + 0.057 (MF12) + 0.023 (MA1)
  + 0.018 (MA2) + 0.015 (MA3)
  + 0.025 (MA4)]

Conclusions and implications

It is concluded that the audit engagement quality (AEQ) model provides a single quantified measure of process quality. Further, the AEQ model generates a more comprehensive and more objective measure providing stronger motivation for improvement in audit process quality than existing audit productivity measures.

The AEQ model formulated in this paper is based on components derived from the consensus of sub-groups of practising auditors via structured group processes. It has been noted that prior research has concentrated on two measures of audit process quality—time budgets and staff evaluations. It is recognised that other derivations of time budget analyses such as 'billable fees' (actual hours × standard rates compared with actual fee billed) and subjective evaluations of quality, such as the attitude of the partner or in-charge auditor on the engagement, are meaningful and commonly utilised. In direct comparison with the other quantified measures, however, AEQ is more comprehensive.

It may be noted that two of the 19 quality factors incorporated into the AEQ model are directly comparable to the previously researched measures—Billing of Fees (A3) and Time Budget Analysis (A4). The first obvious comparison of comprehensiveness is that 17 additional factors with the intent of recognising deviations in quality throughout the entire audit process are included in the AEQ model. It is also observable that the two previously researched model components received the lowest or near the lowest weightings of importance. The weighting of 27.5 for 'Billing of Fees' is the least important rated of all 19 quality factors. The participating auditors provide a clear indication that ten other factors, with weighting scores in the 100 to 150 range, are four to six times as important to total engagement quality as the often emphasised billing of fees. Similarly, 15 of the 17 additional factors (all of the planning and field-work related factors) are considered significantly more important than the traditional analysis of time budget variations.

These results are interesting from the standpoint of understanding what auditors perceive as the major factors influencing audit quality. In deriving an understanding of practising auditors' perceptions of the major hurdles in maintaining high quality service, outside observers of the audit market should gain a better understanding of the audit process itself. The impact of potential political problems involved in successful audit completion as symbolised by factors such as 'client rapport' and 'client reaction' are significant. These findings shoud be of importance to practitioners, regulators and researchers interested in the audit independence issue.

The conclusion that the AEQ measure is more objective than previously researched quantitative measures is supported by the high degree of agreement between participating auditors concerning the strength and relevance of the measures selected for each quality factor (Table 3). Ten of the 17 measures selected as 'best' for the newly generated quality factors have strength measures exceeding the measure for time budget analyses, and eleven were rated stronger than the best measure for billing of fees. The problems and imperfections associated with the subjectivity in staff evaluations have been discussed in earlier sections of this paper. The auditors participating in this study reflect the subjectivity of existing staff evaluations by excluding any direct measure of staff evaluations from the AEQ model.

It is further concluded that the developed AEQ model provides the framework for practical implementation of audit quality improvements. A direct application of the 19 factor model as presented may not be feasible in a majority of audits. Knowledge that over 200 experienced auditors have a high degree of consensus concerning the importance of 19 key quality factors should increase practical consideration of how these factors affect different engagements even if quantitative measures are not combined to obtain a single quantitative indicator of relative quality. An alternative to using a quantitative indicator has also been suggested by Sutton and Lampe (1989) who prescribe a DSS model for evaluating factors and monitoring for high/low·values along the lines of a control chart approach. Regardless of the approach taken, consistent recognition of 19 comprehensive factors does not permit a single evaluator to be emphasised over alternative dimensions. Therefore, the potential for decreased total engagement quality due to overemphasis of one or two relatively unimportant factors is reduced. The limits on emphasis of individual factors is important from two perspectives. First, overemphasis of a single factor would needlessly increase the cost of auditing while receiving minimal benefit. On the other hand, determination of a weak area in the audit may point out the need for additional auditing to minimise the cost of non-auditing (i.e. the cost of audit failure). The net result should be better cost control of the audit process.

Although the AEQ provides a more comprehensive and objective measure of relative variations in audit quality between audit engagements, it also possesses some limitations. A process measure is imperatively limited to the process and is more relevant to the audit team than external recipients of the audit report. Results from the AEQ model, however, provide indirect benefit to many of the external participants affected by the audit process. The audit committee of an auditee could gain access to process measures via the exit conference.

Judges or investigating committees could similarly be provided with objective measures to justify acceptable levels of audit performance. The process measure does not, however, provide the single user of a single audit report with an ultimate indication of success or failure with respect to the decision being made based on audited financial statements.

It is also recognised that audit team members will be biased when it is perceived that process quality measures are also being used as performance evaluators. In the same way that line items in a time budget may be manipulated by audit team members, components of quality measures could similarly be manipulated. Whether or not manipulations of input variables are present in a given engagement, the relative importance of quality factors will change over time and in unique engagement situations. Additional research will be necessary to refine both the number and weighting of quality factors included as components of a process model applied to specific audit engagements.

The AEQ model developed in this study has been simplified by the restriction of one 'best' measure of deviation in each quality factor. Numerous other highly rated measures were generated in this research but omitted from the simplified model. Additionally, the objective measurement of some factors is still difficult and improvements might be made through continued study. Subweighting of multiple quality measures per identified quality factor component is also likely to eliminate some of the sub-optimal imperfections included in the model.

Despite these recognised limitations, the overall conclusion is very positive. Over 200 practising auditors from two different international accounting firms provide strong evidence that objective measures of more comprehensive quality factors result in improved indicators of audit process quality. More comprehensive and more objective measures of audit quality provide direct motivation for improved performance by the audit team and indirect comparisons for external users, preparers and reviewers of audit reports associated with the financial statements of publicly held companies.

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The Structuring of Organizations. *Henry Mintzberg.* Prentice-Hall, 1979. x + 512 pp. £47.10 HB. £22.95 PB.

Mintzberg on Management: Inside Our Strange World of Organizations. *Henry Mintzberg.* The Free Press, 1989. x + 418 pp. £19.95 HB.

Henry Mintzberg's *The Structuring of Organisations*, first published in 1979, is now available in a cheaper student edition. The opening notes describe the book as a French banquet: voluminous and to be consumed in a set order. The French cooking analogy also extends to quality, for the text provides an excellent synthesis of managerialist research on organisational design up to the late 1970s. Organisations are conceived in systems terms as flows of information, materials, authority and decisions. The design task is seen as matching correctly the methods of coordinating an organisation's activities to its contingencies of age and size, technology, environments and the needs and fashions of people with power over it. The principal means of coordination are depicted as personal supervision, rules, training and indoctrination, planning and control systems, and informal decentralised modes of liaising. Depending upon the contingencies confronting the organisation, it is argued that the most effective organisational designs range from simple entrepreneurial forms, through mechanistic and then professionally controlled bureaucracies, to divisionalised firms and 'adhocracies'. The latter encompasses young creative organic organisations operating in complex, dynamic environments.

As is acknowledged, the ideas draw heavily on those of James Thompson and Jay Galbraith. These works have been plundered remorselessly by management accounting researchers seeking illumination on how accounting systems relate to other controls, what causes dimensions of systems to vary and why, and how accounting controls such as budgets and divisionalised forms are related to patterns of organisational development. Mintzberg is a seasoned and proven researcher of

information systems; consequently his text is a rich, if dated, source of material in these areas. Also, his analysis is sensitive to the research of the late 1970s indicating the latitude managers have over creating organisation structures and the importance that their values and needs play. It does not reduce organisational design to a merely deterministic technical task of matching structures to prevailing contingencies, thereby sanitising it of people, politics and prejudices.

When Mintzberg's book first appeared, Stuart Clegg with David Dunkerley also published a weighty and influential tome on organisation theory, titled *The Theory of Power and Organization*. Whilst both books covered ostensibly similar material, their orientations and levels of analysis were very different. Clegg and Dunkerley were critical of the rampant managerialism in much of organisation theory. In contrast to the systems theory of Mintzberg and many other North American organisation theorists, they drew from European debates in sociology and political economy to construct a radical analysis of how bureaucratic forms were related to developments in capitalism. Drawing partly from Marxist writers such as Gramsci and Braverman, they drew attention to the role of the state and capital in shaping controls over labour within firms and the maintenance of employee consent through ideology. Critical theorists within accounting have, during the 1980s, explored the significance of such ideas for their own subject.

The publication of new books by Mintzberg and Clegg, detailed above, provides an opportunity to examine the development of their thoughts over the past decade. *Mintzberg on Management* is a compilation of edited extracts from previously published works, including *The Structuring of Organisations*, with a linking commentary. If his book on organisational design was a banquet, then this new one is more like a provocative after-dinner speech to a semi-comatose business audience. It embraces his early work on managerial roles, strategy, the usage (and non-usage) of accounting information, through organisational design and creativity, to his later broadsides on managerial training and corporate regulation.

The most notorious section recounts Mintzberg's loss of faith in MBA degrees to the extent of taking a salary cut to avoid teaching on them. His reasons were several. Mintzberg's own research has been based on observational descriptions of managers at

work. The crux of his argument resides in his conviction that what MBAs are taught bears little relation to what creative and effective managers do. Whereas this is essentially intuitive, experiential and social, MBA teaching emphasises the formal, the analytic and scientific, and peripheral staff functions rather than the core ones of production and sales. Finance theory is exposed to a particular diatribe in this respect. He claims that there is little evidence indicating that MBAs display superior performance in management positions and at worst they may even be harmful, especially in his beloved 'adhocracies'.

He distinguishes between administrative and managerial training. Administrative training encompasses (no doubt to the relief of readers of this journal) techniques like accounting on courses for the inexperienced, including first degrees. Managerial training he would confine to proven managers and its primary focus would lie in developing interpersonal skills in negotiation and gleaning information, discussing descriptive observations of practice, and learning techniques such as accounting, statistics and computing.

Mintzberg's arguments resonate with those of Johnson and Kaplan on management accounting in *Relevance Lost*. Both are indicative of contemporary North American soul-searching about effective management after the ravages of Far Eastern competition. They are pertinent to Europe given the growing vogue for MBA courses here, and to Britain especially, given its accelerated deindustrialisation over the past decade. However, the evidence for Mintzberg's case is thin, as is his exposition of alternative teaching proposals. At the risk of appearing smug and complacent, the lack of reference to pertinent European debates and experiences is disappointing. For example, action learning, which forms the basis of several leading European MBAs and which was devised to meet criticisms similar to Mintzberg's, receives no attention whatsoever.

The final part of this book is devoted to Mintzberg's views on corporate regulation. On the one hand he is concerned with the societal power of large mechanistic organisations and their management; on the other he is implacably opposed to the claims by corporate executives, supported by Milton Friedman and his acolytes, that corporate control should be left to market forces, noting in a short chapter the deficiencies of financial 'efficiency' as a social arbiter. Various methods of controlling corporations are presented, including worker democracy and nationalisation. His conclusions are essentially pragmatic: initially governments should trust the corporation whilst simultaneously encouraging social responsibility and external pressure groups, and perhaps introducing greater employee democracy. Only if this fails should regulation and thence national-

isation or government intervention be contemplated.

This section is disappointing, possibly because it is the one where the author's knowledge of the topic is slightest. It is however an indication of how the direction of prevailing winds blowing from leading business schools and corporate commentators is switching: from promoting management prerogatives and unrestrained market forces to ecologically tinged notions of social partnership. Perhaps British accountants should be blowing the dust off *The Corporate Report*.

Stewart Clegg's *Modern Organisations* also traces recent changes in how we organise and think about work. Once again food, namely the production of French bread, is germane to his central argument that we have moved from a modern to a postmodern world. According to the imperatives of market economics and contingency factors, mass-produced factory bread should have supplanted the produce of the local bakers in France. This has not happened. The reasons are more complex than merely ascribing them to cultural factors. For example, they include the ability of new entrants from the countryside to marry wives willing to undertake critical tasks within the bakery. The text is also rich in detailed analysis of how Far Eastern organisations, especially those of Japan, South Korea and Taiwan, differ from their Western counterparts and from one another with respect to size, organisation structures, styles of management, state intervention and financing. The Far Eastern firms have generally been economically successful, despite their organisation structures bearing little resemblance to the prescriptions of contingency theorists. Similarly their economic environments bear little semblance to the unbridled capitalism often articulated by influential economic policy-makers in the UK. Clegg argues that failed deterministic theories of organisational design and development (be they neo-classical economics or Marxist) should be replaced by an alternative framework whereby conventional contingency factors and national institutions (including state intervention, patterns of ownership, and sources of finance) are seen to produce different modes of rationality in societies and hence different organisational forms. He is highly sceptical of cultural explanations currently in vogue, due to their vagueness and neglect of institutional factors.

The study of economically successful organisations outside the West reveals how recommendations for effective management, organisational design and state policies toward industry peddled by business school academics and consultants are not scientific imperatives determined by circumstances, but rather derive from our peculiar notions of what constitutes rationality. For example, Clegg discusses at length how in the West formal rationality is based in accounting, the law

and bureaucracy, whereas in sectors of Chinese businesses it is family and ethnicity. The modernist belief in the one best way has to give way to the postmodernist position of variety, pluralism and the acceptance that the normative is ultimately an expression of values and beliefs. Following this orbituary to TINA in organisation studies Clegg, like Mintzberg, raises the question of the import of social regulation over organisations to arrest the emergence of over-privileged groups within society, and the need to re-examine individual rights to representation within organisations and notions of economic democracy such as those pursued through wage funds in Sweden.

John Kao's *The Entrepreneurial Organization* should be examined in the context of this hubbub about what business schools teach, the state of management theory, and corporate responses to Japanese competition. Kao is a professor at Harvard Business School and his book is based on an MBA elective on Entrepreneurship, Creativity and Organization. His framework of analysis is a rather tired and briefly presented contingency model purporting to show that entrepreneurship and creativity flow from the right fit between the type of person, task and the organisational context. Entrepreneurialism is studied in evolving and established organisations. Little material on the processes of creative behaviour is covered compared to formal structural analyses of strategy and corporate development. This book contains fourteen case studies of entrepreneurs innovating with varying degrees of success. A high proportion of the heroes seem to emanate from business schools in Boston, Mass.: several of the cases recount the psychological hang-ups of such species. Only one case (Scandinavian Airlines) is from outside the USA. Another (Au Bon Pain), takes us back to our theme of French food. The manufacture of French breads and croissants for the American market is immediately reduced to a problem of franchising, profitability, corporate growth and human resource management. No consideration or information is given about the organisation of the industry in France. Presumably it is deemed irrelevant to the personnel problems subsequently encountered by the American entrepreneurs. But Clegg's analysis, derived in part from Weber's classic work on rationality, suggests otherwise. Kao does recommend his students to read Weber on this topic, but his assertion that Weber shows how bureaucracy is a consequence of market efficiency, reveals a fundamental misunderstanding common amongst North American academics. Weber describes how bureaucracy and notions of efficiency are an expression of a particular form of western rationality which he regarded with at best ambivalence and at worst profound pessimism. Markets and efficiency are not given but a product of social imagination. Weber's fate has been to

be hijacked by his critics. Viewed from such a perspective, books such as Kao's are best seen as vehicles for socialising legions of MBAs into North American management culture and myths. Through a succession of cases the manager is presented as the lone entrepreneur, armed with analytical models from MBA courses, creating within the bureaucracies of American conglomerates. Whether this constitutes worthwhile training for effective management in days of global competition, bearing in mind the strictures of Mintzberg and Clegg, is open to question.

University of Manchester   Trevor Hopper

An Empirical Study of Financial Disclosures by Swedish Companies, *T. E. Cooke*. Garland Publishing, 1989. 381 pp. US$52

This is in fact two books in one. On the one hand, there is an empirical study of voluntary financial disclosures by a sample of 90 Swedish companies, which seeks to relate the level of disclosure to certain firm-level variables. Associated with this empirical study, which constitutes Part III of the book, are two chapters which constitute the introduction to the book and contain the relevant reviews of theory and of the literature. This constitutes Part I of the book. Taken together, these two parts would represent a substantial research monograph, the objective of which is to review existing theory, derive testable hypotheses linking voluntary disclosure practices to certain firm-level variables, and then carry out testing of these hypotheses. Sandwiched between these two parts is Part II. This is a thorough, descriptive account of Swedish financial accounting and reporting, focusing on institutions and practice in considerable detail. The material in this Part II derives from a research study carried out by the author for the Institute of Chartered Accountants in England and Wales and published in 1988. In substance, it does already exist as a separate research monograph. The author's attempt to integrate it with the work described in Parts I and III altogether of the book is not altogether successful. What seems to have happened, historically, is that the author produced Parts I and III in order to enable the research as a whole to satisfy the requirements of a doctoral dissertation. Whether the empirical study using the sample of Swedish companies was part of the original research design is not clear. However, the way in which the present book was produced meant that the material resulting from this work was grafted on to the original, descriptive research material in a way that raised some major editorial problems which have not been satisfactorily resolved. One instance of this is that the chapter used to provide a link between Part I and Part III

(chapter 3) consists of only 3 pages, of which two are diagrams.

The result is that the book suffers from something of a split personality. Considered as a descriptive study, Part II is very good, as was the original research monograph on which it is based. This monograph served as a prototype for a major series of books on European Financial Reporting, on which work is now in progress. However, if one considers the focus of the new book to be an empirical study of financial disclosure by Swedish companies, there are many details in Part II which are, at best, peripheral to this topic. These include details of stock exchange trading practices, academic qualifications necessary to become a state authorised auditor, changes in the size of the professional auditing institute, and others. Whilst much of this information may be interesting, the reasons for its inclusion in the present book are unclear. Part II occupies 126 pages whereas the institutional material needed to explain financial disclosures in Sweden could have been covered in a fraction of this length.

The theoretical and empirical Parts I and III together take up 164 pages. This seems a great deal for a study which, in terms of its inherent interest, can hardly be said to warrant more than a medium-length research monograph (or, say, two full length journal articles) at most. This would add up to about 50 pages. Part I is a fairly thorough review of relevant theory and literature, but it displays no particular originality. In addition, the author fails to acknowledge the problematic nature of the relationship between disclosure practices and requirements on the one hand and 'user needs' on the other. No reference is made to market efficiency or to empirical research into user decision making. The problematical nature of the concept of 'general purpose financial statements' identified by Most (1982) is also overlooked. (Most asks whether general purpose financial statements are 'information' or merely 'data'. Since production of information requires knowledge of the users' decision-model or information purpose, general purpose statements would seem to be data rather than information.) Considering Part I as an introduction to the empirical work presented in Part III, this may not greatly matter, but Part I in itself offers very little in the way of original insights. A minor point is that the author decided to exclude the use of the companies' auditing firms as an independent variable, on the grounds that the normal Swedish practice is to name individual auditors rather than the audit firm. But, as I found in my own research, it is generally possible to identify at least the larger firms from the name of the audit partner who has signed the audit opinion, by using the international directories of the major firms.

The empirical study is set out in considerable detail in Part III. Like many such empirical studies, it is interesting more for the issues of research method which it addresses than for its conclusions. The study investigates empirical relationships between voluntary disclosure and the following firm-level variables: quotation status, parent company relationship, annual sales, total assets size, number of shareholders, and industry type. Two hypotheses are investigated: H1 is concerned with the relationship between voluntary disclosures and quotation status, while H2 considers all of the six variables just mentioned, so that testing it involves use of multiple regression. H1 was tested using both non-parametric and parametric approaches.

Three categories of quotation status were considered in connection with H1. These were: unlisted, listed on the Stockholm exchange only, and listed in Stockholm and elsewhere. The study shows that there is a strong relationship between quotation status and voluntary disclosure practice. Listed companies disclose more than unlisted, and those with multiple listings disclose more than those with a single listing in Stockholm. This is an interesting, if not particularly surprising, result. It would, however, be more interesting if the study were able to suggest reasons for these differences. A feature of the regulation of financial reporting in Sweden is that only a limited number of disclosures are absolutely mandatory, while many disclosures are recommended or regarded as good practice but not mandatory. This raises the question whether the disclosures made by companies with multiple listings might be influenced by listing requirements on the other exchanges. Dr Cooke's study did not investigate this. To pursue these issues further would probably require the adoption of different methods, such as questionnaires and/or interviews.

With regard to H2, the study found that there is a significant relationship between the extent of voluntary disclosure and two of the independent variables: quotation status and size. Not surprisingly, it did not matter which of the size variables was used. In fact, there is a fairly strong relationship between the two independent variables themselves, although not to the extent that multicollinearity between these variables was a problem. By using step-wise regression, the study shows that quotation status has a greater influence on voluntary disclosure than has size. Industry classification was a significant influence only to the extent that voluntary disclosure by trading companies was found to be significantly lower than for the other industry categories.

The empirical study illustrates a number of interesting issues of statistical method, which are dealt with in a thorough, albeit fairly conventional, way. However, it is not clear that readers interested

in this material would have a similar interest in the details provided in Part II of the book, and vice versa. These comments should not be taken as a criticism of Dr Cooke's work, which is of a high standard. However, as noted earlier, the problems of putting the book together as a coherent whole have not been satisfactorily resolved. PhD dissertations are written to satisfy examination committees, rather than to meet the needs of the reading public, even a reading public of interested specialists. Thus, these critical comments should perhaps be addressed to the series editor and the publishers of this book, as much as to the author.

The latter is to be complimented on the quality of his work, if not on the quality of his writing. Apart from the problems of structure in the book, it must be said that there are also a number of stylistic infelicities, as well as errors of grammar and syntax. Examples are: 'the agent is likely to have access to superior information than the principal', 'the general purpose report also manifests itself by the extent of disclosure to government authorities', 'corporate annual reports is one medium of disclosure used to communicate with user groups', 'it might be found that the extent of disclosure by multiple-listed companies is generally higher than other companies'.

On page 18, it is stated that a prior study 'represented a major advance in applying the scientific approach to disclosure in corporate annual reports'. The notion that there is such a thing as *the* scientific approach' has been widely discredited in the literature of the philosophy of science. That is not to say that there is no such thing as '*a* scientific approach', and that is perhaps what Dr Cooke meant. This may, therefore, be another instance of linguistic infelicity rather than a case of epistemological naivete.

It is also the case that parts of the book are written in an extremely repetitive manner. This is particularly true of Part I, comprising chapters one and two. This may well have resulted from the author's wish to anticipate every query of his doctoral examination board, but it certainly makes things tedious for the reader.

Let me end on a positive note by saying that Dr Cooke displays throughout his book an impressive knowledge of Swedish accounting and financial reporting together with the cultural and institutional background. For those wishing to improve their knowledge of financial reporting in a country whose practices in these areas have a number of interesting features, the stylistic limitations of this book are well worth overlooking.

University of Wales, Bangor   Simon Archer

Financial Regulation—or Over Regulation? *Arthur Seldon (ed.)*. Institute of Economic Affairs, 1988. viii + 68 pp. £5.00

The present financial regulatory system in the UK rests on the 1986 Financial Services Act (FSA) which was introduced following the recommendations of the Gower Report on Investor Protection, itself directly occasioned by several failures of financial institutions in the 1970s.

This volume is based on material presented at an IEA conference on regulation held in June 1987 by four contributors, two of whom, Charles Goodhart and John Kay, are academic economists and two of whom, Kate Mortimer and Andrew Duguid, are regulators, with an introduction by the IEA's Research and Editorial Director, Cento Veljanovski. While it is not surprising to find that the IEA should be opposed to excessive government interference in the working of markets, Veljanovski's arguments are buttressed by both Goodhart and Kay.

Goodhart argues that because the Gower philosophy eschews a cost benefit approach to regulation we have been saddled with an enormously complex and costly system. The author lists the direct resource costs of regulation: people, equipment and buildings, estimated at over £100 million a year, the costs of financing the Compensation Fund, and other less quantifiable costs such as the risk of losing business due to the burden of regulation, reduced competition and stifling innovation. Though Goodhart can see the case for external measures of regulation to enforce a more generous system of deposit insurance, a method of initial authorisation and capital adequacy, he questions the need to go further than this.

Kay examines the forms of regulation and questions the Gower premises that all financial markets require regulation and that self regulation is generally superior to statutory regulation. He argues that the economic efficiency costs are more significant than the direct costs. He does concede that the case for the regulation of retail financial services is stronger than that for the regulation of wholesale financial services but like Goodhart can see no convincing arguments for regulations which impose other than solvency requirements and statutory quality licensing of various kinds.

Kate Mortimer, Director of Policy at the Securities and Investments Board, 1985–87, is a staunch defender of the FSA, and takes the view that if regulation helps prevent fraud it is desirable almost at any price. Ms. Mortimer supports the industry wide compensation scheme, arguing that it is unlikely to result in moral hazard, but she is against compulsory professional indemnity insurance. However, more than three years on and with the benefit of hindsight, I find it difficult to defend a compensation system which only covers losses to a
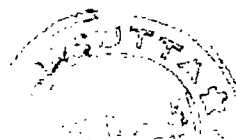
maximum of £48,000 but which at the same time imposes unreasonable obligations on honest members of FIMBRA, the Self Regulatory Organisation for independent financial advisers. As for professional indemnity insurance, in the event it will be mandatory for all FIMBRA members from April 1991.

Andrew Duguid's discussion of self regulation at Lloyd's where he was Head of Regulatory Services, concludes thus:

> I would argue that the regulatory balance struck in the UK, where an enlightened philosophy has prevailed at the Department of Trade—and at Lloyd's, where 'self regulation' has evolved rapidly and no doubt a little belatedly in recent years—has not imposed undue costs.

This may now sound a little complacent in the light of the continuing losses in certain syndicates at Lloyd's and the criticism of the DTI over the Barlow Clowes affair and the payment of over £190 million in government compensation to investors who lost money in the liquidation of the Clowes companies. However, even this may be small beer in comparison with the continuing annual costs of the present regulatory system.

Though much water has passed under the regulatory bridge since 1987, this volume is still a useful introduction to the subject. It is an interesting conjecture to what extent the modifications which have been made to the system in the direction of reduced bureaucracy and less onerous compliance requirements are a direct result of the concerns voiced in this volume.

UCW Aberystwyth   Ken Richards

Understanding Accounting in a Changing Environment. *Anthony Hopwood, Michael Page and Stuart Turley.* Prentice Hall, 1990, pp. xi + 125. £30.

This book is a curious work. One might have hoped that it would be the definitive treatment of the future of the accountancy profession and accountants in the United Kingdom. Unfortunately, it is not.

Despite the unfairness of criticising a book because it does not follow the format preferred by the reviewer, to say what the authors have not done is nevertheless beneficial. The book is the culmination of a two-year period of brain-storming exercises, dialogue and discussion among 35 individuals brought together by the Institute of Chartered Accountants in England and Wales (ICAEW) under the umbrella of the Understanding a Changing Environment Group (UCEG). Essentially, this book claims to be a distillation of the ideas and thoughts which emanated from the nine meetings of the group. The book is described

in its Foreword by Professor John Arnold, Director of Research of the ICAEW, as a rich and fascinating tapestry of the thinking of men and women at the forefront of their fields. This is a large claim, and suggests that there was probably a meeting of minds before the book was written. But it must be said at once that at the purely literary level the fruits of collaboration are not among the more obvious merits of this book. The reader is not provided with the conclusions of the UCEG, yet the authors report that the deliberations of the UCEG were temporary and their reports and conclusions undoubtedly partial and reflective of the concerns prevailing at the time they were articulated (p. 118). One would have been better informed if some of the papers which formed the basis of the discussion of the UCEG had been published unedited with some comments from the authors (or editors) describing the concerns of the leading members of the profession. Perhaps the fact that this book is not issued under the name of the UCEG suggests that the members are not necessarily in agreement with its content.

From the cover one is led to believe that the book will provide an understanding of accounting in a changing environment. It does not provide a thorough and objective treatment of the present state of accounting and how it will change. In fact it does not deal with accounting (i.e. the measurement, recording and reporting of economic transactions and events); it is concerned with accounting institutions, accountants and the market for accounting services. There are some explanations and descriptions of the changing environment of accounting but not how to cope with such changes in the future. A work of this sort does not often make very satisfactory reading.

Firstly, the book attempts to cover within a few pages a range of subject matter of a complexity difficult to portray without distortion. More than that, in this instance it reveals itself as a special pleading for speculations about the future of accountants and accountancy in the UK supported by sketchy argumentation that leaves this reader more sceptical than he ever was before reading it. It wastes too much space on present, though evolving, issues with which the profession has come to grips but neglects important issues which are more likely to alter the course of accounting practice within this decade.

Secondly, the book fails to deal with known events which could change the course of the market for accounting services and its regulation. For example, the book ignores the recent movement in the UK from self-regulation to market regulation. It explains its neglect of this important change in a footnote which states that the chapter was written prior to the publication of the review of standard-setting chaired by Sir Ron Dearing (p. 74), but it should have been apparent to the

authors that the changes suggested in the Dearing Report are critical to the future of accounting regulation. Again, not much is written about the potential impact of the single European market. Finally, the opportunities and threats from the changing social structure of Eastern Europe are not addressed.

Now to relate what the book does achieve. It considers some of the problems of policy and of goals regarding accounting and its organisation in the changing UK environment. The idea is to point out the chief defects of the present arrangements; to suggest how these anomalies may be removed; to investigate whether the practice of accounting and corporate reporting should be nurtured by codification or by gradual development through professional self-regulation; and to discuss the future of accounting and the future role of accountants and auditors against the background of contemporary and future UK society. Such a project will naturally provoke a good deal of discussion and, probably, disagreement, and the literature of accounting in the UK would have been enhanced if this book had been written in a manner which would have promoted the development of the study of the future of the accounting profession. The authors (respectively the convener, a member and the secretary of UCEG) have succeeded in producing a profluent (though verbose) prose which avoids a reportage format. But for the caveat at the beginning of the book, it would have been difficult to know that its content was the result of conferences and discussions under the auspices of UCEG or any other group.

Two chapters in this book are particularly interesting and are recommended reading for academics interested in the study of the future of accountants and accounting practice. These are chapters 2 and 10. Chapter 2 provides an illustration of how scenarios can be constructed and used to study the future of the accountancy profession. Three scenarios based on assumptions about economic growth are offered and used to suggest the areas where strategies for change have to be developed. The strategies and how to develop them are not specified. Chapter 10 is stimulating and reads like an article in the Hopwood style. It is described as an overview but should have been the lead chapter of the book. This piece considers accounting's future in the past, how accounting has repeatedly become what it was not, how to structure a context for exploring the accounting future and how accounting is moving towards the future.

I feel constrained to end this review on a negative note. Apart from the two chapters referred to above, the book is not new, and fails as a serious scholarly contribution to debates about the struc-

ture of UK accounting in the context of Europe. One is not sure of the audience to which the book is addressed. The book is generally not academic; neither does it deal with professional matters. It is about the future of the profession but it is neither definitive nor written as a discussion paper to provoke debate. The title of the book is very inviting but the book itself is disappointing. The content is not inaccurate but it is dated and incomplete. The book does not succeed in providing an understanding of the future of the accountancy profession. I would not recommend it for academics and professionals interested in how accounting should respond to and create its future, nor for those who hope to concentrate on change within the accountancy profession.

University of Exeter   R. S. Olusegun Wallace

EC Financial Reporting Harmonisation. *Catriona Paisey.* Institute of Chartered Accountants of Scotland, 1991. vi + 88 pp. £6.

If this monograph is judged by the purpose mentioned in the foreword ('to be understandable to readers who are not already familiar with the existing extensive literature'), then it succeeds well enough. However, for those already working the field, there is little of novelty here; and for novices the monograph's main advantage over good up-to-date textbooks is its brevity.

The first chapter (on the meaning of harmonisation) is more up-to-date and comprehensive than most summaries; the second (on classification) is less up-to-date and more abbreviated than some. Chapters 3 to 5 are good summaries of legal, financial and other relevant environments. However, they are too derivative of other publications. This has unfortunate side effects. For example, this 1991 monograph quotes a 1989 book giving 1986 data (p. 28), when more recent data could easily be found. Further, by not relying on source data, the author states (p. 32) that Portugal had not enacted legislation on the Fourth Directive by March 1990 (but Portugal's appropriate law was of November 1989).

The final two chapters look to the future in a perfectly sensible way; and the bibliography is useful, though already overtaken by a mass of publications in 1990 and 1991. In summary, for those who are completely innocent of comparative accounting and who have little time to read, this will be a useful introduction to harmonisation.

University of Reading   Christopher Nobes

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A cover page should show the title of the paper, the author's name, title and affiliation, and any acknowledgements. The title of the paper, but not the author's name, should appear on the first page of the text. An Abstract of 150–250 words should be provided on a separate page immediately preceding the text.

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Each table and figure should bear a number and a title and should be referred to in the text. Sources should be clearly stated.

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Footnotes should be used only in order to avoid interrupting the continuity of the text and should not be used to excess. They should be numbered consecutively throughout the manuscript with superscript arabic numerals. They should not be used in book reviews.

References

References should be listed at the end of the paper and referred to in the text as, for example, (Zeff, 1980, p. 24). Wherever appropriate, the reference should include a page or chapter number. Only works cited in the paper should be included in the list. Citations to institutional works should if possible employ acronyms or short titles. If an author's name is mentioned in the text it need not be repeated in the citation, e.g. 'Whittington (1986, p. 6) states . . . '

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Accounting Standards Steering Committee (1975), *The Corporate Report*.
Ashton, D. J. (1986), 'Goal Programming and Intelligent Financial Simulation Models, Part 2', *Accounting and Business Research*, Spring.
Watts, R. L. and Zimmerman, J. L. (1986), *Positive Accounting Theory* (Englewood Cliffs, NJ: Prentice-Hall).

Style and spelling

Abbreviations should be written as, for example, FASB and not F.A.S.B. Words such as 'realise' should be spelt with an 's' not a 'z'. Single quotations marks should be used, not double.

Mathematical notation

Mathematical notation should be used only where its rigour and precision are indispensable, and authors should explain in narrative form the principal operations performed. Such notation should be avoided in footnotes. Equations should be numbered in parentheses, flush with the right-hand margin.

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Contents

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An Empirical Analysis of Current US Practice in Evaluating and Controlling Overseas Operations

Orapin Duangploy and Dahli Gray*

Abstract—This project examined whether US based multinational managers used different techniques for evaluating and controlling foreign operations during the late 1980s than they used in the late 1970s and early 1980s. Consistent with prior research, a combination of surveys and interviews provided the data. Contrary to the prediction of prior research, managers continue to use financial data that has been translated into US dollars versus reports in the foreign (local) currency. Managers continue to emphasise profit as the primary basis of evaluating and controlling foreign operations. Significant changes include the increased emphasis on 'actual compared to budget' and decreased emphasis on return on investment.

United States multinational enterprises (MNEs) striving to increase sales and profit have established foreign subsidiaries. Adequate and effective systems have had to be developed to evaluate (as well as to control) the international operations and to ensure that the non-US operations complied with US corporate goals. Non-US operations, unlike domestic operations, are often complicated by uncontrollable factors such as fluctuating exchange rates, cultural influences on perceptions, and government intervention.

Measuring performance (which is part of the control function) can be in terms of local currency, home country currency, or both. Translation methods have changed. Before the Financial Accounting Standards Board (FASB) issued Statement of Financial Accounting Standards (SFAS) No. 8 *Accounting for the Translation of Foreign Currency Transactions and Foreign Currency Financial Statements* in 1975, foreign exchange accounting policies were diverse. Some firms used the Accounting Principles Board (APB) modified approach to translation, some used the current versus non-current method, others used the monetary versus non-monetary method, and a few used the current rate method (Pakkala, 1975).

Research on performance evaluation indicated that MNEs used more US dollar information in the middle 1960s. In the early 1970s, MNEs appeared to value local currency information and by 1973 (before the FASB issued SFAS 8) MNEs split between using US dollar or local currency information (Morsicato, 1979). Profit and return on investment (ROI) appeared to be the most important financial measures during this era of diversity in foreign currency translation methods. The other important measure cited is budget compared to actual profit.

After the FASB issued SFAS 8, the temporal method[1] was the only method allowed. Thus diversity was narrowed, which enabled comparability from firm to firm. Morsicato (1980) conducted a study in the late 1970s when MNEs were required to adopt the temporal method in translating their foreign subsidiaries' financial statements to US dollars. Thirty-three per cent of her respondents had modified their system of internal performance evaluation during the 1970s primarily due to SFAS 8 coupled with currency fluctuations. The accounting change had resulted in more emphasis on local currency information and increased use of budgets.

This paper reports on an analysis of the measurement and reporting preferences of US-parent corporations relative to their non-US operations. We investigated whether there were any significant differences between overseas performance evaluation before and after the FASB issued SFAS 52, which introduced the functional cur-

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[1]The temporal method requires that monetary assets and liabilities be translated ('remeasured' per SFAS 52) using the exchange rate in effect as of the balance sheet date. Nonmonetary assets and owners' equity are remeasured using the rate in effect at the time the item was recognised in the accounts. SFAS 52 provides details of how to apply the temporal method.
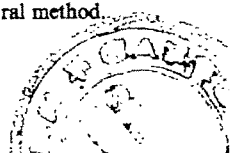
Table 1
Financial Measures Used Internally for Evaluating Performance of Foreign Subsidiaries

Financial Measures	Before Translation to US Dollars	After Translation to US Dollars	Both
	%	%	%
Profit	67.6	90.1	80.2
Return on assets (ROI)	50.5	77.5	49.5
Net income/Stockholders' equity	28.8	45.9	70.3
Cash-flow potential to US	32.4	72.1	44.1
Operating profit/Total assets	36.0	55.9	67.6
Inventory turnover	53.2	62.2	49.5
Net income/Sales	50.5	64.0	57.7
Current assets/Current liabilities	28.8	37.8	65.8
Accounts receivable turnover	51.4	47.8	42.3
Cash/Total liabilities	24.3	20.7	73.0
Budget compared to actual profit	63.1	84.7	55.0
Budget compared to actual ROI	37.8	56.8	64.9
Others	9.9	12.6	90.1

rency concept[2] and re-introduced the current rate method.[3] The paper focuses on the relative importance of the use of local-currency and/or US dollar financial data.

Methodology

A survey was conducted by mailing a questionnaire to each of the Fortune 500. This mailing was supplemented by a follow-up mailing of reminder postcards. Of the 500 firms, 165 (33 per cent) responded. Since anonymity was assured, identity of the responding versus non-responding MNEs was impossible to ascertain. Twenty-two of the respondent firms declined to participate due to corporate policy. Of the remaining 143 respondents, 32 of the questionnaires were not usable because of incompleteness or other factors. The remaining 111 questionnaires (22 per cent) were usable and are the basis of the empirical analysis reported in this paper. The completed questionnaires provided information regarding the performance evaluation and control practices of the late 1980s versus 1970s (i.e., prior research). They stated whether local currency or the US dollar information was used for financial and comparative measures. They also allowed detection of the

[2]For a discussion of the functional currency concept see Gray (1983). In brief: '[a]n entity's functional currency is the currency of the primary economic environment in which the entity operates; normally, that is the currency of the environment in which an entity primarily generates and expends cash' (SFAS 52, para. 77).

[3]The current rate method requires that assets and liabilities of a foreign subsidiary, using its local currency as the functional currency, be translated into US dollars using the currency exchange rate in effect as of the balance sheet date. SFAS 52 provides details of how to apply the current rate method.

circumstances under which the current rate versus the temporal method was used and whether nonfinancial measures were employed.

After eliminating the 22 firms that declined to participate, 12 firms were randomly selected from the remaining firms for telephone interviews. The interviews were designed to determine why certain methods were applied and to explore further implications of the research findings. The twelve interviews were carried out at the senior level of management (e.g., financial vice president, controller or finance director). Executives were asked to explain why local currency (LC) or US dollar (US$) measures were used in evaluating and controlling overseas operations.

Research findings

The survey results are summarised into three major categories: financial, comparative and nonfinancial measures. The analysis of the interview results are incorporated in this section.

Financial Measures: Method and Rationale

The survey results are summarised in Tables 1 through 8. Table 1 indicates that MNEs apply composite financial measures in evaluating and controlling overseas subsidiaries and use more US$ financial information than LC information. The majority of the respondents apply both the LC and US$ information when using the thirteen financial measures displayed in Table 1.

With the exception of the 'collection period on accounts receivable' and the 'cash to total liabilities' measures, the 'after translation to US$' measures are used more often than the 'before translation to US$' (LC) financial measures. Both

inventory turnover and collection period on accounts receivable measures are considered as variables within the control of local management. These two variables in LC are particularly important in countries with high inflation.

Based on the frequency of the responses to the application of the thirteen financial measures (see Table 1), profit is the primary measure chosen in both LC (67.6%) and US$ (90.1%). This is followed by 'budget compared to actual profit' in both LC (63.1%) and US$ (84.7%). However, the third key measure advocated in US$ is ROI (77.5%), whereas in LC the third most important variable is inventory turnover (53.2%). Only about half of the respondents selected ROI in LC for evaluating and controlling performance of foreign subsidiaries.

As shown in Table 2, the ranking of the before translation (LC) and the after translation (US$) methods are the same for the following measures: profit, cash divided by total liabilities, budget compared to actual profit, budget compared to actual ROI, and others. However, substantial disparities emerge in the following measures: ROI, cash-flow potential to the US, inventory turnover, and accounts receivable turnover.

ROI and cash-flow potential were relatively more significant in US$ than in LC. While the LC ROI informs the subsidiary manager regarding the subsidiary's return on assets, the US$ ROI allowed the corporate level to compare easily the corporate cost of capital to assets used to ensure adequate

profitability. The subsidiaries can have little control over some of the factors incorporated in the ROI. ROI has generally been accepted as a measure for which it is difficult to achieve a standardised numerator (profit) and/or denominator (investment). One technical problem is the lack of agreement on the determination of the investment base ranging from gross book value to total stockholders' equity (Tse, 1979). The numerator may incorporate costs of shared resources that are allocated in an arbitrary manner and are non-controllable at the subsidiary level. Allocation of expenses and investment remains a 'major stumbling block to obtaining logically sound measures of income and investment for use in evaluating divisional performance' (Spiller, 1988, p. 6). Cash-flow potential in US$ is more important than in LC, since the US investors are interested in US$. The value of funds repatriated from foreign subsidiaries to the US is exposed to the fluctuating exchange rates.

The Spearman Rank Correlation Coefficient Test, as shown in Table 2, ranks the data displayed in Table 1 and determines if the After Translation to US$ method and the Before Translation to US$ method are correlated. The test performed indicates that the two methods are correlated at a significance level of .01 with a correlation coefficient of .817. Thus, there is a significant association between the rankings of the two methods which results in relatively few disparities between the preference of one method over the other.

Table 2
Ranks of Financial Measures Before Translation to US Dollars and After Translation to US Dollars

| Financial Measures | Translation | | d | d^{2*} |
	Before	After	(Difference)	
Profit	1	1	0	0
Return on assets (ROI)	5.5	3	2.5	6.25
Net income/Stockholders' equity	10.5	10	0.5	0.25
Cash-flow potential to US	9	4	5.0	25.0
Operating profit/Total assets	8	8	0	0
Inventory turnover	3	6	−3.0	9.0
Net income/Sales	5.5	5	0.5	0.25
Current assets/Current liabilities	10.5	11	−0.5	0.25
Accounts receivable turnover	4	9	−5.0	25.0
Cash/Total liabilities	12	12	0	0
Budget compared to actual profit	2	2	0	0
Budget compared to actual ROI	7	7	0	0
Others	13	13	0	0
				66.0

*Significant at .01 level with a correlation coefficient of .817 under the Spearman Rank Correlation Coefficient test.

Table 3
Exchange Rates Used for Translating Foreign Operations into the United States Dollar

Exchange Rate Used	Percentage
Current rate method	62.2
Temporal method	27.9
Both current rate method and temporal method	19.8
Average exchange rate	28.8
Budgeted exchange rate	13.5

The choice of using before or after translation to US$ appears to be contingent on how many subsidiaries a firm owns. Among MNEs that have only a few subsidiaries, LC financial measures were considered best. The main reasons cited included the following: the subsidiary has no control over fluctuating exchange rates and the LC information allows the evaluation of the true economic situation of the subsidiary and takes out the uncontrollable factors. The before translation to US$ financial measures allowed corporate management to evaluate the subsidiary as it stands alone.

The majority of the participants appear to have a significant number of foreign subsidiaries. As a result, although they agree that foreign subsidiaries have no control over the fluctuating exchange rates, the after translation to US$ financial measures are necessary as a common denominator to facilitate the evaluation of the total corporation. In addition, LC information is also used to provide a basis of evaluating local management since the untranslated information is within the realm of management control. This is reflected in a remark made by an MNE executive: 'LC done at the local plant and used to explain variances masked by currency fluctuations; e.g., strong dollar can show increased sales, yet in LC terms, sales are flat.'

As the board of directors is perceived to be more concerned with consolidated figures, they want the foreign subsidiaries to be sensitive to US$ values relative to the LC. A vast majority (75.7%) of the respondents agreed that the after translation to US$ method provides more useful information when the information is presented to the board of directors and central management.

Exchange Rate for Translating Foreign Operations

The current rate method is the predominant method used (62.2%) in translating foreign operations into the US$. The temporal method (27.9%) is cited as being used for countries with high inflationary economies. Several MNEs interviewed indicated that it is convenient to use the same translation method for both internal and external reporting.

Table 3 exhibits the percentage frequency of selecting a certain exchange rate. Of the 69 MNEs (62.2%) choosing the current rate method and 31 MNEs (27.9%) selecting the temporal method, 22 MNEs apply both the current rate and temporal methods in translating their foreign operations. Thirty-two MNEs apply the average exchange rate in translating foreign operations into US$. Budgeted exchange rate is the least frequently used rate. One MNE respondent commented that budgeted exchange rate is used for European subsidiaries only.

Table 4
Comparative Measures Applied in Evaluating Overseas Performance

Current Period Financial Statements Compared With	Local Currency	United States Dollar	Both
	%	%	%
Prior period financial statements	68.5	82.0	54.05
Financial statements of similar firms in the same country	21.6	17.1	5.41
Financial statements of similar firms in different countries	20.7	50.5	16.22
Others	11.7	13.5	8.11

Comparative Measures

In addition to the financial measures of the current year, MNEs used comparative measures in evaluating overseas operations. Table 4 indicates that the most commonly (i.e., 82%) advocated approach is comparing current period financial statements with prior period financial statements in US$. A majority of the respondents applied US$ more frequently than the LC in three of the four measures and both the LC and US$ in all comparative measures. The application of comparative measures in both currencies has the least frequency of use; probably it is used simply as a supplement to account for the uncontrollable fluctuating exchange rates. The distinction between the application of US$ versus LC is perceived by one MNE executive as follows: 'US$ column says "high inflation currency" and 'LC' says "low inflation currencies".' In other words, the LC comparative measures are used for countries with low inflation and the US$ comparative measures for countries with high inflation.

Having the US$ as a common denominator facilitates comparison. A majority used the US$ more frequently than the LC (50.5% as compared

with 20.7%) when comparing foreign subsidiaries' current financial statements with those of similar units in different countries. Due to the lack of reliable information on the competitors in the foreign countries, only about 17.1% of the MNEs compare their subsidiaries to similar firms in the same country in US$, whereas 21.6% do so using local currency.

The data was analysed using the chi-square test. The results of the test among the US$, LC and both currency comparative measures indicated that there is a significant difference at the 5% level. The US$ comparative measures tend to be more frequently applied than the LC or both US$ and LC comparative measures.

Financial Measures and Translation Methods

Table 5 provides contingency coefficients of the translation method relative to the financial measures used to evaluate the foreign subsidiary's performance. Under SFAS 52, the functional currency concept is adopted. Functional currency is the currency of the primary economy in which an entity expends and generates cash. If the US dollar is the functional currency, the temporal method must be used to remeasure

Table 5
Contingency Coefficients of Translation Method Relative to Financial Measures Used to Evaluate Foreign Subsidiary Performance

| Financial Measures | Method | | | |
| | Temporal | | Current Rate | |
	AT	BT	AT	BT
Profit	0.138	0.045	0.010	0.133
ROI	0.047	0.014	0.112	0.081
NI/SE[1]	0.150	0.135	0.048	0.045
Cash Flow[2]	0.074	0.002	0.094	0.064
OP/TA[3]	0.028	0.007	0.017	0.072
IT[4]	0.035	0.066	0.044	0.044
IN/S[5]	0.071	0.059	0.118	0.025
CA/CL[6]	0.030	0.003	0.072	0.037
ART[7]	0.088	0.077	0.035	0.016
C/TL[8]	0.021	0.072	0.032	0.096
BCTAP[9]	0.097	0.019	0.029	0.095
BCTAROI[10]	0.055	0.062	0.095	0.072

*Significant at .05 level.
  1. Net income divided by shareholders' equity
  2. Cash flow potential from foreign subsidiary to parent
  3. Operating profits divided by total assets
  4. Inventory turnover
  5. Net income divided by sales
  6. Current assets divided by current liabilities
  7. Accounts receivable turnover
  8. Cash divided by total liabilities
  9. Budget compared to actual profit
  10. Budget compared to actual ROI

the foreign currency financial statements into US dollars. The foreign operations are considered to be an extension of the parent company, the economic effect of an exchange rate change on a foreign operation having a direct impact on the parent's cash flow. Thus, translation gains and losses must be included in the income statement.

On the other hand, if the local currency is the functional currency, the foreign currency financial statements are translated into the US dollar by applying the current rate method. As the foreign operations are presumed to be self-contained, the economic effect of an exchange rate change does not have a direct impact on the parent's cash flow. Translation adjustments are deferred as adjustments to the equity section in the balance sheet.

Under the premise of the functional currency, the after-translation financial measures should be relevant for evaluating overseas operations and the before-translation local currency performance indicators should be applicable in measuring performance of foreign operations that operate and generate cash flows in local currency. Thus, there should be correlations between the after-translation financial measures and the temporal method and a correlation between the before-translation financial measures and the current rate method.

Among the twelve variables, relatively strong correlations between the temporal method and the after-translation performance indicators are found in net income to shareholders' equity (.150), profit (.138), and budget compared to actual profit (.097). When computing the correlation between the current method and the before-translation financial measures, the interrelationship between the current rate method and profit (.133), cash/total liabilities (.096), and budget compared to actual profit (.095) are the three strongest correlations.

When comparing the association between the temporal method and the after-translation performance indicators versus the before-translation financial measures, with the exception of three

variables (inventory turnover, cash/total liabilities, and budget compared to actual ROI), the association between the temporal method and the after-translation financial measures is relatively stronger than the correlation between the temporal method and the before-translation performance indicators.

The correlation between the current rate method and the after-translation financial measures is also relatively higher than the before-translation performance indicators in seven of the twelve variables compared. The correlation between the current rate and the before-translation performance indicators is relatively stronger than the after-translation variables in profit, operating profits/total assets, cash/total liabilities, and budget compared to actual profit.

The analyses reveal that there is no consistency in the correlation between the performance indicators and the translation method. At a significance level of .05, there is no significant correlation between the twelve variables and the two translation methods under the functional currency concept. Nevertheless, MNEs appear to prefer the after-translation profit performance indicator when the temporal method is applied or when the US dollar is the functional currency. The before-translation profit financial measure is the prominent variable used when the local currency is the functional currency that requires the application of the current rate method.

Non-financial Measures

In addition to financial measures, non-financial measures were used in evaluating overseas operations (see Table 6). Of the non-financial measures used internally for the evaluation of foreign subsidiary managers, 76 MNEs (68.5%) applied market share as measured by sales, 68 companies (61.3%) used productivity measurements (calculated either as the output obtained per unit of input or the input required per unit of output). Inventory performance as measured by stock on hand divided by planned consumption per day was selected by 52 firms (46.8%). Among the other measures cited by 19 respondents (17.1%) were

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Table 6
Non-financial Measures Used Internally for the Evaluation of Foreign Subsidiary Managers

Non-financial Measures Used	Percentage
Market share as measured by sales	68.5
Productivity, calculated either as the output obtained per unit of input or the input required per unit of output	61.3
Inventory performance as measured by stock on hand divided by planned consumption per day	46.8
Others	17.1

gains in profit, competitors by product line, unit sales, sales per employee, and technology development. These results are illustrated in Table 6. One executive explained that if yield is maximised, long-run profit will also be maximised. Thus, the importance of non-financial measures is no less than that of financial measures.

Comparison with other studies

Various research studies have examined the methods for evaluating overseas subsidiary performance. Given the fact that financial measures are predominantly used for evaluating overseas operations, MNEs appear to use the same financial reporting procedures for management reporting. In the US, there has been a change in financial reporting since December 1981 after the replacement of SFAS 8 by SFAS 52. With SFAS 52, the current rate method is widely used instead of only the temporal method as required in SFAS 8. The current rate method resembles the closing rate used in the UK. In this section of this paper we identify differences between US and UK performance evaluation methods in the early 1980s (Demirag, 1988) and in the late 1980s (this research). We also present a comparison of Morsicato's study (1982) of the 1970s when SFAS 8 was in effect and the 1980s when SFAS 52 became effective.

Comparison with Morsicato's Study

A comparison between this study and Morsicato's study (1982) reveals that the after-translation financial measures were more frequently used in the late eighties after the adoption of the functional currency per SFAS 52 (analysed

in this study) versus the late seventies (Morsicato's study). As shown in Table 7, with the exception of ROI, the frequency of application of the translated financial measures has gone up in this study. On the other hand, the application of the before-translation performance measures has gone down in the late eighties when compared to their applications in the late seventies.

Nevertheless, both studies indicated that the most frequently used financial measures are the after translation dollar measures. The order of the frequently used financial measures has changed from profit, ROI and budget in the seventies to profit, budget and ROI in the 1980s. Thus, another major difference in the two studies' findings is the greater importance of actual to budget comparison on profit than ROI. The latter has often been criticised as having the potential to be highly arbitrary in cases where intercorporate transfers are significant and are not at arm's length prices. The other major drawback of the ROI is the comparability of what constitutes income and investment.

Comparison with Demirag's Study

Demirag (1988) conducted a similar study in the UK during 1982, examining 105 MNEs (see Table 8). He indicated that the majority (61.9%) of the UK MNEs applied the closing rate method in translating foreign subsidiaries' financial statements. The UK MNEs appear to be more local currency oriented than their US counterparts. Like the US MNEs, both the local currency and parent company currency (which has frequently been referred to as composite) financial measures were used for evaluating overseas performance. The US MNEs have higher frequencies of using the com-

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Table 7
A Comparative Analysis of Morsicato's Study and This Study on US MNEs' Financial Measures for Evaluating Performance of Foreign Subsidiaries

	After Translation		Before Translation	
	This Study	Morsicato	This Study	Morsicato
	%	%	%	%
Profit	90.1	81.4	67.6	70.0
Return on assets (ROI)	77.5	80.0	50.5	52.9
Budget compared with actual profits	84.7	78.6	63.1	72.9
Cash flow potential from foreign subsidiaries to US	72.1	65.7	32.2	35.7
Budget compared with actual return on investment	56.8	45.7	37.8	38.6

Morsicato's (1982) study is based on a total of 70 MNEs and was conducted in the late 1970s. This study is based on a total of 111 MNEs and was conducted in 1988.

Table 8
A Comparative Analysis of US and UK MNEs' Financial Measures Used Internally for Evaluating Performance of Foreign Subsidiaries in the 1980s

	Before Translation		After Translation	
	US MNEs	UK MNEs	US MNEs	UK MNEs
	%	%	%	%
Profit	67.6	60.0	90.1	41.0
Return on assets (ROI)	50.5	77.2	77.5	47.6
Cash-flow potential from subsidiary to US or UK	32.2	44.7	72.1	42.8
Budget compared with actual profits	63.1	84.8	84.7	52.4
Budget compared with actual return on investment	37.8	64.8	56.8	42.9
Return on equity	28.8	33.3	45.9	22.8

UK percentage is based on a total of 105 UK MNEs reported in Demirag's (1988) study. US percentage is based on a total of 111 US MNEs participating in this study.

posite financial measures than the UK MNEs. The UK MNEs selected budget compared with actual profits most frequently as the financial measure in both local currency and sterling. This is followed by ROI and budget compared with actual ROI in local currency, and by ROI, then budget compared with actual sales, in sterling. Profit, which is most frequently applied by the US MNEs, is not among the three most frequently used financial measures by the UK MNEs (Demirag, p. 271).

The current rate method in SFAS 52 and the closing rate method are very similar; neither requires the recognition of exchange gains and losses in the income statement. A comparative analysis of the practices of the two countries, however, indicates that US MNEs prefer parent company currency to local currency. Table 8 shows the frequency of application of the before translation and after translation performance indicators found in this study and Demirag's study. The after translation financial measures have consistently been used more frequently by the US MNEs than their UK counterparts. On the other hand, with the exception of the profit variable, the UK MNEs apply the before translation performance indicators more frequently than the US MNEs.

The majority of the respondents in both countries stated that the after translation in parent company currency method provides more useful information when the information is presented to the board of directors. After translation, financial data have the advantages of providing easy to understand and compatible information. The local currency financial data, on the other hand, have the advantages of providing information that relates to conditions under which the foreign

operations are carried out and avoid translation distortions[4].

The main difference between the two countries' preference of currency orientation in performance evaluation of overseas operations could be attributable to the disparity in educational background and international business exposure of the top management as well as the number of foreign subsidiaries involved. Norburn conducted a cross-national analysis between corporate leaders in Britain and America and found that there was a significant difference in educational influence. Eighty-seven percent of the US executives graduated at first-degree level with predominantly a liberal arts education. Only 54% of the UK top management graduated at the same level but predominantly with a science-based degree. Further, the study found that US top management experienced a lesser degree of cross-functional general management exposure than their UK counterparts. Also, since the UK percentage of exports as a share of national output was nearly three times that of the US, the focus of the US executives was domestic whereas that of their UK counterparts was

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[4]The current rate method requires assets and liabilities to be translated using the current rate; the stockholders' equity accounts are still required to be translated using the historical rate. Thus, there is no linear transformation between the local currency accounts and the translated accounts. In fact, Zieta and Duangploy's study indicated the inconsistent results generated by the current rate method on ratios; in particular, the return on stockholders' equity. Due to the inclusion of the translation adjustment in stockholders' equity and not in net income, when the foreign currency strengthens, the return on stockholders' equity is below that which would have been shown if the equity denominator and the income numerator in the calculation were compatible (Zieta and Duangploy, 1984).

international business (Norburn, 1987). This lack of emphasis on international perspective was also found in Tung and Miller's study. Based on their findings, American executives failed to consider an international perspective as an important criterion for recruitment and for promotion/recruitment to senior management positions (Tung and Miller, p. 13).

Financial Accounting Mentality

US management reporting has been criticised for using information prepared for external reporting in evaluating management performance. With the new process technologies, new inventory and materials handling systems, new computer-based abilities in design, engineering and production, and new approaches to work force management, the existing accounting system has been considered to be outdated, thus distorting economic performance. Kaplan has recommended that 'internal accounting practice should be driven by corporate strategy, not by FASB and SEC requirements for external reporting' (Kaplan, 1984).

The UK probably would not have this problem. It has been asserted that many European companies have two different accounting systems: one for internal operations and another for external reports. Having similar translation methods for external reporting in the eighties, the US executives appeared to be more parent company oriented than their UK counterparts. This may be another indication of the dependency of US internal management practices on external reporting.

Conclusions

This research was conducted to examine current US practice in evaluating and controlling overseas operations. Despite the change in the generally accepted accounting principles from SFAS 8 to SFAS 52, US MNEs continued to use financial data that has been translated into US dollars versus reports in the local (foreign) currency. Managers continued to emphasise profit as the primary basis of evaluating and controlling foreign operations. Significant changes include the increased emphasis on budget compared to actual profit and decreased emphasis on return on investment.

In comparison with UK MNEs, US MNEs appear to be more parent company oriented. Despite the close resemblance between the closing rate and the current rate methods, US MNEs use the after-translation financial measures significantly more frequently than their UK counterparts and place a greater emphasis on profit as a prominent financial measure in evaluating and

controlling their overseas operations than do the UK MNEs. Some of the findings of this study, however, are consistent with other research studies. For example, Morsicato's study revealed that US-based MNEs assumed an ethnocentric attitude and preferred reports denominated in the US dollar (Morsicato, 1982). Tung and Miller's study indicated that American managers and executives appear to be consistently ethnocentric in their approach to management succession and the development and implementation of policies, practices and procedures designed to support corporate management succession programmes (Tung and Miller, 1990). In short, despite the growing importance of globalisation, the current US practice in evaluation and controlling overseas operations continues to be parent company oriented.

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Appendix I

Evaluation of Overseas Performance

Please check all of the following financial measures that your firm uses *internally* for evaluating the performance of your foreign subsidiaries.

Before translation to US$	After translation to US$	Financial Measures of Performance
[·]	[ ]	Profit
[ ]	[ ]	Return on investments (assets)
[ ]	[ ]	Net income/stockholders' equity
[ ]	[ ]	Cash-flow potential from subsidiary to US
[ ]	[ ]	Operating profits/total assets
[ ]	[ ]	Inventory turnover
[ ]	[ ]	Net income/sales
[ ]	[ ]	Current assets/current liabilities
[ ]	[ ]	Collection period on accounts receivable
[ ]	[ ]	Cash/total liabilities
[ ]	[ ]	Budget compared to actual profit
[ ]	[ ]	Budget compared to actual return on investment
[ ]	[ ]	Others; please specify ....

Please check the comparative measure(s) applied in evaluating the overseas performance.

US$	Local Currency	
[ ]	[ ]	Current period financial statements compared with prior period financial statements
[ ]	[ ]	Current period financial statements compared with financial statements of similar units in the same country
[ ]	[ ]	Current period financial statements compared with financial statements of similar units in different countries
[ ]	[ ]	Others (please specify)...

Please check the type of exchange rate(s) applied in setting the budget and actual performance for comparing results.

Budget	Actual Performance	
[ ]	[ ]	Actual exchange rate at the time of setting the budget
[ ]	[ ]	Actual exchange rate at the end-of-period
[ ]	[ ]	Forecast exchange rate
[ ]	[ ]	Forecast end-of-period or forecast average exchange rate
[ ]	[ ]	Actual end-of-period or actual average rate
[ ]	[ ]	No translation is required

In the process of translating foreign operations into the US$, which of the following exchange rates does your firm use?

[ ]   Current rate method rate, if the functional currency is the local currency
[ ]   Temporal method rate, if the functional currency is the US$
[ ]   Average exchange rate
[ ]   Budgeted exchange rate

Please check the relevant circumstances under which the After Translation in US$ method provides more useful information for internal use than the Before Translation in Local Currency method.

[ ]   When the trade of your foreign subsidiary is dependent on the economic environment of the parent company's currency
[ ]   When the foreign subsidiary operates in a local highly inflationary economy
[ ]   When the information is presented to the board of directors and management headquarters
[ ]   When the operations of the foreign subsidiary are relatively self-contained and integrated within a particular country

Please check the non-financial measures used internally for the evaluation of foreign subsidiary managers.

[ ]   Market share as measured by sales
[ ]   Productivity measurement, calculated either as the output obtained per unit of input or the input required per unit of output
[ ]   Inventory performance as measured by stock on hand/planned consumption per day
[ ]   Others (please specify)..

Please mark one answer for each of the following questions/statements:

Always	*Regularly*	*Occasionally*	*Rarely*	*Never*	
[ ]	[ ]	[ ]	[ ]	[ ]	Evaluation of subsidiary and manager are separate
[ ]	[ ]	[ ]	[ ]	[ ]	Techniques to evaluate managers and subsidiaries are the same
[ ]	[ ]	[ ]	[ ]	[ ]	Evaluation of overseas management is done strictly in the local currency and only on those revenues and expenses controllable by him/her
[ ]	[ ]	[ ]	[ ]	[ ]	System of internal performance evaluation has been revised since 1982
[ ]	[ ]	[ ]	[ ]	[ ]	Translation gains/losses included in the income figure used to evaluate the foreign subsidiary manager for internal reports
[ ]	[ ]	[ ]	[ ]	[ ]	Transaction gains/losses excluded from the income figure used to evaluate the foreign subsidiary manager for internal reports
[ ]	[ ]	[ ]	[ ]	[ ]	Non-financial measures are more important than financial measures in evaluating a manager's performance
[ ]	[ ]	[ ]	[ ]	[ ]	Budgets are used in the performance evaluation process
[ ]	[ ]	[ ]	[ ]	[ ]	Budgets are prepared in local currency and then translated into US$
[ ]	[ ]	[ ]	[ ]	[ ]	Actual/budget comparison more widely used for internal management evaluation than the application of past period financial data
[ ]	[ ]	[ ]	[ ]	[ ]	Existing overseas operation performance evaluation systems incorporate consideration of environmental differences (e.g., social, economic, political, legal, and educational factors)

Thank you for your help.

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Contents

The Expanded Audit Report—
An Empirical Investigation

David Hatherly, John Innes and Tom Brown*

Abstract—There is a widespread concern about the 'expectations' gap in auditing. To help close this gap the profession in the United States has recently expanded its standard audit report to give a fuller understanding of the scope, nature and significance of the audit. The primary research question addressed in this paper is whether a UK derivative of the US expanded report has the power, compared to the current short form report used in the UK, to help the reasonably intelligent reader to understand better the audit and the auditor's role. The research was conducted by experiment with 140 part-time MBA students from the University of Edinburgh. The results provide clear evidence of the ability of the UK derivative to change reader perceptions. Moreover significant changes are not limited to matters directly addressed in the expansion of the audit report. A 'halo' effect is observed whereby the expanded wording seems to generate a feeling of well-being which spills over to matters not directly addressed in the UK derivative. However, there is a danger that such a 'halo' effect might widen rather than narrow the expectations gap. The policy implication is that all important dimensions, including fraud, should be addressed directly in the expansion of the audit report.

Introduction

Audit reporting is a specialised segment of the communications business and the auditor's role as a communicator is increasingly the focus of attention. The need for more effective audit reporting is recognised (for example, Mednick, 1986) as a way of closing the expectations gap identified by the Auditing Research Foundation (1989, p. 9) as a priority area for study.

There are two distinct but related possibilities as to how audit reports might help close the expectations gap. One possibility, as recommended by Adelberg (1979) and Estes (1982), is to depart from standardised wording, whilst the other is to retain standardised wording but to expand the audit report to give a fuller understanding of the main areas of judgement in financial statements, of the limitations and uses of the financial statements, and of the scope, nature and limitations of audit work.

Such an expanded audit report has been introduced in the US as a result of SAS 58 (Auditing Standards Board, 1988), and the research reported in this paper contemplates the introduction in the UK of a derivative of the US report. An expanded audit report has two potential effects upon the expectations gap. One is by inducing a change

in the report reader's perception of the audit. The other is by inducing a change in the auditor's perception of what is required and hence indirectly influencing the conduct and quality of the audit work. In the United Kingdom the Auditing Practices Committee was, at the time of writing, examining the possibility of introducing an expanded report with the objective of influencing the report reader's perceptions of the extant audit. To assist with this policy decision the research reported in this paper examines the effect of the expanded audit report upon the report reader. The auditing profession has yet to consider the possible effect of audit report expansion upon the conduct of the audit. This remains as an important outstanding issue.

Thus the primary research question addressed in this paper is whether a UK derivative of the US report has the power to help the reasonably intelligent reader (with some business experience but no formal audit training) to understand better the audit and the auditor's role.

Previous research

Reviews of audit reporting research are found in Craswell (1985), Gwilliam (1987, pp. 107-133) and Holt and Moizer (1990). Holt and Moizer classify audit reporting research into reaction studies and interpretation studies. Empirical reaction studies generally investigate stock market reactions to various qualified audit reports whereas experimental reaction studies examine the impact of qualified reports on the subjects' evaluation of management performance, credit worthiness, etc. Interpretation

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studies include Libby (1979), Bailey (1981), Bailey *et al.* (1983), Nair and Rittenberg (1987), Robertson (1988), Holt and Moizer (1990) and Kelly and Mohrweis (1989). They generally employ multi-dimensional similarity rating and/or adjectival scale research instruments to investigate the meanings and significance attributed to various styles of audit report wording. Key research questions addressed by some or all of these studies are as follows:

1. Are different meanings attached to different styles of qualified audit report?
2. Are different meanings attached to qualified as against unqualified audit reports?
3. Are different meanings attached by different groups—bankers, auditors, investors, etc.?
4. Are different meanings attached to audit reports issued by major international as against local audit firms?
5. Are different meanings attached to expanded as against short form unqualified audit reports?

Very few of the interpretation studies address the last of these issues. Bailey *et al.* investigated the expanded report suggested in the 1980 exposure draft (Auditing Standards Board, 1980) which the Auditing Standards Board issued but then withdrew seven months later. It was found that the proposed wording of the 1980 exposure draft shifted readers' perceptions of the responsibility for financial statements from the auditor toward management, with more knowledgeable readers placing more responsibility on management than less knowledgeable readers. Nair and Rittenberg (1987) investigated the alternative report suggested by the Commission on Auditors' Responsibilities (AICPA, 1978). They found that bankers placed more responsibility for the financial statements on the auditor vis-à-vis management than did CPAs but that the problem was mitigated to some extent by the alternative report. Kelly and Mohrweis (1989) studied the impact of the SAS 58 wording and found that understandability was significantly increased regarding the purposes of the audit and the responsibility of management for the financial statements. In addition to these studies Geiger (1989) has analysed comments on the exposure draft (Auditing Standards Board, 1987) which led to SAS 58, whilst Zachry (1989) has surveyed the attitudes of practitioners and auditing academics to SAS 58. These two studies differ from the others in the sense that they examine perceptions of the SAS 58 report rather than perceptions of the audit and financial statements induced by the report.

To answer the research question as to whether different meanings are attached to the audit as a result of expanded as against the short form unqualified audit report, it is necessary to compare perceptions based upon each of the two reports. Since expanded reports are not presently used in

the UK, the comparison can only be carried out in an experimental study. Our experimental subjects were 140 part-time MBA students at the University of Edinburgh. The students were divided into 2

Table 1

The Expanded and Short Form Audit Reports

*Independent Auditors' Report
to the Members of X Company Limited*

We have audited the financial statements on pages 3 to 10. These financial statements consist of the balance sheet at 30 April 1989, profit and loss account and funds statement for the year then ended and the notes to the financial statements. These financial statements are the responsibility of the company's directors. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with approved auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a selective basis, evidence suporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting policies used and any significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above give a true and fair view of the state of the company's affairs at 30 April 1989 and of its profit and source and application of funds for the year then ended and comply with the Companies Act 1985.

T & S
Chartered Accountants
Edinburgh

3 October 1989

*X Company Limited
Auditors' Report to the Members*

We have audited the financial statements on pages 3 to 10 in accordance with approved auditing standards.

In our opinion, the financial statements give a true and fair view of the state of the company's affairs at 30 April 1989 and of its profit and source and application of funds for the year then ended and comply with the Companies Act 1985.

T & S
Chartered Accountants
Edinburgh

3 October 1989

groups matched on the basis of age (as a surrogate for experience), and an MBA aptitude test score. They are drawn from a wide section of commercial, financial, manufacturing and government bodies. In the experiment they served as surrogates for the reasonably intelligent audit report reader who has business experience but no formal audit training or education.

The Expanded Report

The two reports used in the study are reproduced in Table 1. The expanded report used is the SAS 58 report wording with the minimum amendments necessary to make it compatible with the UK company auditing environment. A comparison of wording differences between the SAS 58 wording and the UK derivative used in this study is made by comparing the US wording in Appendix 1 with the wording at the top of Table 1.

One group of 70 students was given a fictitious company's Directors' Report and Financial Statements containing the short form audit report whilst the matched group was given the identical Directors' Report and Financial Statements but containing the expanded audit report. Thus the experiment was designed so that any statistically significant differences between the perceptions of the two groups could reliably be attributed to the use of the different audit reports. Since the financial statements received by each group were identical, the experimental design met the basic control procedure suggested by Bailey (1982, p. 144) for experiments involving comparison of audit reports. Subjects were instructed to read the audit report but were advised that the remainder of the Directors' Report and Financial Statements was to provide a realistic setting and need not be studied in detail. The results, therefore, should not have been influenced by the particulars of the Directors' Report and Financial Statements. Subjects did not confer and were given minimal explanation of the purpose of the research in order to avoid 'demand effects' whereby the subjects' responses are influenced by their perceptions of the researcher's hypothesis (Pany and Reckers, 1987).

The Questionnaire Design and Contents

The questionnaire was designed to elicit subject perception of particular attributes of the audit, of the financial statements and of the auditee. In order to determine which attributes should be covered by the questionnaire a detailed analysis was performed of those attributes covered by other interpretation studies (Libby (1979), Bailey *et al.* (1983), Nair and Rittenberg (1987), Robertson (1988) and Holt and Moizer (1990)) and of the attributes identified in theoretical studies (Mautz and Sharaf (1961) and Lee (1986)) as constituting the postulates of auditing. The analysis concluded that the attributes of these studies could be categorised as belonging to

18 dimensions (shown in the first column of Appendix II). The main area of difficulty in the analysis was the treatment of attributes referring to internal control/controls. Did internal control(s) constitute a separate dimension? It was concluded that, at one level, internal control could be incorporated in the dimension 'proper accounting records' whilst at a higher 'management control' level it was covered by the dimension concerned with the management of the company.

It was necessary to devise a questionnaire of manageable length for the participant subjects, and hence the questionnaire included only one primary question in respect of each dimension. There were, therefore, no cross checking questions. (The questions are shown in Appendix II, column 2.) As far as possible, questions were devised so that their wording did not repeat that used in either of the audit reports. In the case of one dimension (compliance of the financial statements with legal requirements) the possible wording of any question was considered far less direct than the wording already in the audit report and so no question was included. Hence the dimension was dropped from the study. A final review of the completeness of the questionnaire resulted in one additional question— about whether the purpose of the audit was clearly communicated in the audit report. The questionnaire was pilot tested by 12 students and, as a result, a number of amendments were made to clarify the questions.

Each question required a response on a seven-point Likert scale with scale end points 'strongly agree'—'strongly disagree' or 'to a very great extent' —'not at all'. In the case of the latter, a supplementary question asked the subject how sure he/she felt about the answer given. Again a seven-point scale was used with end points 'very sure'—'very unsure'. In this way it was possible to examine whether the subjects' level of confidence in their responses varied according to the audit report wording. However, the research results provided no examples of subjects' confidence in their reponses being significantly influenced by the report wording.

The Results

Appendix II shows the results in detail. On each dimension it gives the level of significance for the difference in the mean scores of the short form and expanded reports. Significance levels were calculated using Student's 't'. The 't' test assumes that the scores (which are summed in computing the means) in the samples are independent observations from normally distributed populations with (usually) equal variances (Siegel and Castellan Jr., 1988, p. 103). For each audit report on every dimension it was found that subject scores closely approximated to a normal distribution. However, the variances of the scores for the two audit reports were not equal for some dimensions and hence a

Table 2

The Summarised Results

Dimensions directly addressed by the expanded report	*Dimensions not directly addressed by the expanded report*
Purpose of audit clearly communicated (S_1)	Satisfactory (S_1)
Auditor's integrity, independence (S_1)	Fraud (S_5)
Specific v. whole (S_1)	Credibility (S_{10})
Management representations (S_1)	Proper accounting records (S_{20})
Auditor's judgement and discretion (S_1)	Management of the company (S_{20})
Accounting standards and principles (S_{20})	Decision usefulness—investment/disinvestment
Management/Auditor responsibility (S_{20})	Conflict between management/auditor
Extent of work	Auditor accountability
	Decision usefulness—performance monitoring
	Riskiness/viability of the company
S_x = Significant at the x% level.	

version of the 't' test (on Minitab), which did not rely on equal variances, was used. In general the Student's 't' outperforms non-parametric tests such as Wilcoxon-Mann-Whitney whenever the assumptions necessary for the 't' test hold. However, Wilcoxon-Mann-Whitney is an excellent non-parametric alternative to the 't' test (Siegel and Castellan Jr., 1988, p. 137). To provide a cross check on the results obtained from the 't' test the data was analysed using Wilcoxon-Mann-Whitney. It was found that the same seven dimensions were statistically significant at the 5% level using the 't' test or Wilcoxon-Mann-Whitney.

Table 2 summarises the results and highlights those dimensions for which the change in report was statistically significant at various levels. Table 2 considers separately those dimensions which are more directly addressed by the wording of the expanded report and those which are addressed only indirectly or not at all. For example, the dimension 'Auditor's integrity, independence' is considered to be directly addressed by the expanded report through that report's use of the title 'Independent Auditor's Report'. However, the dimension 'fraud' is not considered to be directly addressed by the expanded report since that report mentions neither fraud nor any similar concept such as impropriety.

Table 2 shows that highly statistically significant differences (S_1) were found for 6 out of the 18 dimensions examined providing clear evidence that the expansion of the audit report is capable of influencing the reader's perceptions. What is not examined by this research is whether as a result the expanded report reader's perceptions move closer to the perceptions of professional auditors. It is intended to examine the perceptions of practising auditors in a further study. Table 2 also shows that a further dimension (fraud) exhibits differences significant at the 5% level.

The categorisation of dimensions into those which are/are not directly addressed by the expanded audit report is to some extent subjective. However, the analysis presented in Table 2 suggests that the expanded audit report has some effect in changing perceptions on all but one of the dimensions which it directly addresses. Appendix II shows the direction of the change. Most significantly of all, it is considered that the expanded report rather than the short form report communicates the purpose of the audit. In addition, the expanded audit report *heightens* the perception that: the auditor is unbiased and objective; the audit opinion relates to the financial statements as a whole; management representations are not relied upon without corroborating evidence; the auditor uses judgement; the financial statements employ accounting policies appropriate to the business; and management and not the auditor is responsible for the financial statements.

Changes in perception that management not the auditors are responsible for the financial statements and changes in perception that the accounting policies are appropriate to the business are each only significant at the 20% level. The question of management/auditor responsibility in particular is a matter on which the auditing profession is keen to advance understanding, and in this respect a 20% significance level may be disappointing. However, the absolute level of the scores (2.3 for the short form report and 1.93 for the expanded) reveals that the subjects who participated in the study appreciated that the financial statements were management's responsibility, since these were the most extreme scores obtained in response to any of the questions. In respect of management/auditor responsibility, the MBA students exhibited a level of awareness which may not be present in other groups. Further research is planned for groups who do not have a background of experience in business.

Table 2 shows no statistically significant change in perception of the extent of the audit work. Unlike the short form report, the expanded report provides a brief description of the audit work undertaken. This expansion results in an increased feeling that the auditor's work is extensive but the increase is not statistically significant and hence the hypothesis that the expansion does not affect the perception of the extent of the audit work (the 'no effect' hypothesis) cannot be ruled out.

Of particular interest from these research results is the expanded report's ability to change perceptions on dimensions not directly addressed by the expansion of the report. In particular, the expanded audit report heightens the perception that the auditor is satisfied with the financial statements, that the company is free of fraud, and that the audit adds credibility to the financial statements. In addition, although only significant at the 20% level, there is some indication of an increased perception that the company is well managed and proper accounting records have been kept. It is possible that the readers' perceptions on the dimensions of satisfaction, fraud and credibility have been influenced by the expansion of the report to include the words 'those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement'. However, satisfaction, fraud and financial statement credibility are not mentioned or otherwise explicitly covered in the expanded audit report. Thus, expanded wording seems to create a greater overall impression of well-being which spills over into certain dimensions not directly addressed by the expansion of the report. Heightened perceptions on dimensions not explicitly addressed by the expansion of the report might be termed a 'halo' effect. However, a 'halo' effect will not be beneficial if, on dimensions such as fraud, it takes the expectations of the reader far beyond what the auditor considers the position to be. Thus, practising auditors may not feel comfortable with all of these heightened perceptions and, where this is so, the auditing profession may be advised to address the dimension directly in the expanded audit report so as to dampen down expectations.

Concluding discussion and summary

This study has examined whether an expansion of the audit report from its current short form to a form derived from SAS 58, can shift the perceptions of the audit report reader. Perceptions of readers were elicited on 18 dimensions identified from an analysis of prior interpretation studies of audit reports along with two major theoretical studies of auditing. Participating in the study were 140 part-time MBA students at the University of Edinburgh. Although the geographical bias of the MBA students is a limitation of the study, analysis of

their backgrounds suggested that they provide acceptable surrogates for the reasonably intelligent audit report reader with business experience but no formal audit training. The research design allows considerable experimental control and the use of straight forward statistical measures. However, the design necessarily limits the focus of the study to a particular question relating to the expectations gap problem, i.e. whether and how a revised audit report might affect the perceptions of its readers. As such the study does not consider other issues surrounding the introduction of an expanded audit report such as its possible effect on the conduct and quality of the audit or its possible impact on the courts' interpretation of both reasonable care and skill, and the auditor's responsibility to shareholders and third parties.

The results of the experimental study provide clear evidence of the ability of an expanded audit report to change reader perceptions. Highly statistically significant changes (significant at the 1% level) were found for six of the eighteen dimensions. Moreover significant changes were not limited to those dimensions directly addressed in the expansion of the audit report. A 'halo' effect is observed whereby the expanded wording seems to generate a feeling of well-being which spills over to provide significant changes for certain other dimensions not directly addressed by the expanded wording of the report. Dimensions enjoying a 'halo' effect include the freedom of the company from fraud. This dimension was significant at the 5% level.

What is not investigated by this study is whether practising auditors feel more or less comfortable with the reader's heightened perceptions induced by the expansion of the audit report. The 'halo' effect will not help to close the expectations gap if it takes the expectations of the reader on dimensions such as fraud further away from what the auditor considers the position to be. To investigate this question, future research will need to elicit the perceptions of practising auditors and to compare them against each of the two sets of perceptions obtained in this study. *Prima facie*, the preferred audit report is that which gives the best match with the perceptions of practising auditors. However, a particular problem might be the tendency of auditors to want to dampen the expectations of the audit report reader below the level which they (the auditors) would otherwise consider justifiable, in order to reduce the likelihood of litigation when things go wrong. Although this is an understandable response to a litigious environment, it is nevertheless undesirable if good communication rather than minimum exposure is to be the guiding principle of audit reporting. These issues need to be examined in further research which could also study the effect of expanding the audit report to address explicitly dimensions such as fraud and proper accounting records: dimensions not directly

addressed in the UK derivative of SAS 58. Finally, it should be noted that this research required the experiment's subjects to read the audit reports. The research results may therefore be affected by questions of external validity if the auditor's report is not read in detail but treated as a code or symbol (Seidler, 1976). It might be hypothesised that an expanded report would be read in detail at the time of the changeover to expanded reports but, once digested, would subsequently be treated as a symbol. If that were so, then this study's results suggest that it would be a more powerful symbol of a clean bill of health than the current short form report.

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Appendix I

SAS 58 Wording

Independent Auditor's Report

We have audited the accompanying balance sheet of X Company as of December 31, 19XX, and the related statements of income, retained earnings, and cash flows for the year then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of X Company as of [at] December 31, 19XX, and the results of its operations and its cash flows for the year then ended in conformity with generally accepted accounting principles.

Appendix 2

The Detailed Results Ranked by Significance Level

Dimension	Question	Mean Score Short Form Report	Mean Score Expanded Report	Standard Deviation Short Form Report	Standard Deviation Expanded Report	Significance Level t-Test
	The purpose of the audit is clearly communicated in the audit report. Strongly agree 1⟨——⟩7 strongly disagree?	4.72	2.67	1.90	1.40	0.00%
Auditor's integrity, independence	The auditor is unbiased and objective. Strongly agree 1⟨——⟩7 strongly disagree?	3.65	2.94	1.27	1.34	0.17%
Specific v. whole	The audit report attaches to the financial statements as a whole and not to any specific items or group of items. Strongly agree 1⟨——⟩7 strongly disagree?	3.03	2.29	1.75	1.13	0.33%
Management's representations	The auditor does not accept management's estimates and explanations without seeking appropriate corroborating evidence. Strongly agree 1⟨——⟩7 strongly disagree?	3.84	3.04	1.65	1.60	0.44%
Auditor's judgement and discretion	To what extent does the auditor exercise judgement in selecting the audit procedures? Very great extent 1⟨——⟩7 not at all?	4.20	3.39	1.61	1.69	0.45%
Satisfaction	The auditor is satisfied with the financial statements. Strongly agree 1⟨——⟩7 strongly disagree?	2.69	2.09	1.58	1.14	1.0%
Fraud	To what extent is the company fraud free? Very great extent 1⟨——⟩7 not at all?	4.46	3.89	1.75	1.44	4.0%
Credibility	To what extent does the audit report enhance the credibility of the financial statements? Very great extent 1⟨——⟩7 not at all?	3.30	2.83	1.65	1.35	6.7%

[Continued overleaf

Appendix 2—*continued*

The Detailed Results Ranked by Significance Level

Dimension	Question	Mean Score Short Form Report	Mean Score Expanded Report	Standard Deviation Short Form Report	Standard Deviation Expanded Report	Significance Level t-Test
Proper accounting records	The company has kept proper accounting records during the year. Strongly agree 1⟨——⟩7 strongly disagree?	3.28	2.93	1.53	1.18	13%
Accounting standards and principles	The financial statements have been prepared on the basis of accounting policies appropriate to the circumstances of the business. Strongly agree 1⟨——⟩7 strongly disagree?	3.70	3.31	1.63	1.43	13%
Management/auditor responsibility	The auditor of the company does not have responsibility for producing the financial statements. Strongly agree 1⟨——⟩7 strongly disagree?	2.30	1.93	1.71	1.38	16%
Management of the company	The audit report is useful in the process of assessing whether or not the company is well managed. Strongly agree 1⟨——⟩7 strongly disagree?	4.56	4.20	1.75	1.46	18%
Decision usefulness—investment/disinvestment	To what extent are the financial statements useful for investment/disinvestment decisions made by an investor? Very great extent 1⟨——⟩7 not at all?	3.38	3.13	1.22	1.28	24%
Conflict between management/auditors	To what extent does the auditor agree with the accounting policies used in the financial statements? Very great extent 1⟨——⟩7 not at all?	3.39	3.13	1.68	1.50	33%
Extent of audit	The audit work is extensive. Strongly agree 1⟨——⟩7 strongly disagree?	4.24	4.07	1.24	1.43	46%

Auditor accountability	The shareholders can hold the auditor accountable for the quality of his work and his opinion. Strongly agree 1 ⟨——⟩7 strongly disagree?	3.23	3.41	1.93	1.72	57%
Decision usefulness—Performance monitoring	To what extent are the financial statements useful for monitoring the performance of the company? Very great extent 1 ⟨——⟩7 not at all?	3.06	2.94	1.22	1.13	57%
Riskiness/viability of the company	The audit report is useful in the process of assessing whether or not the company is financially viable. Strongly agree 1 ⟨——⟩7 strongly disagree?	3.72	3.66	1.79	1.78	84%
Financial statements compliance with legal requirements	No question.				

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Contents

Economic and Accounting Rates of Return: A Statistical Model

Gary Kelly and Mark Tippett*

Abstract—This paper develops a number of statistical procedures than can be used to determine whether a firm's *ex post* accounting rate of return (ARR) is likely to provide guidance as to the economic return the firm will earn over its remaining life. The paper argues that if a corporation's future process cash flows are generated by some form of stochastic process, then the probability density function induced by this can be used to assess whether the ARR provides a reasonable reflection of the economic return the corporation is likely to earn over its remaining life. Five large listed companies are used as case studies to illustrate the model's application.

Introduction

Leading texts on financial statement analysis such as Foster (1986, pp. 67–68) propose the use of accounting rate of return (ARR) measures for assessing the performance of business entities. In addition, the ARR is being increasingly used by financial analysts and government policy advisors to assess the effectiveness of corporate takeovers, to isolate instances of restrictive trade practices, for price setting by government business enterprises and in public sector cost-benefit analyses (Byatt, 1986; Department of Finance, 1987a, 1987b, 1988, 1990; McDougall and Round, 1986; Whittington, 1979, 1988). Since the ARR is based on 'book' figures it is easy to compute and can be readily understood, albeit perhaps at a superficial level, even by those not trained in accounting technique. However, its potential for manipulation by 'creative' accountants, taken in conjunction with the fact that it can be a poor proxy for the theoretically more valid economic (discounted cash flow) or internal rate of return (IRR) measure, has caused some researchers to express the view that the ARR is a potentially dangerous and misleading statistic (Wright, 1978, pp. 466–467).[1] The seminal work of Harcourt (1965, p. 80) identified the basic issue in the following terms:

... the accountant's rate of profit is greatly influenced by irrelevant factors, even under ideal conditions. Any 'man of words'... who compares rates of profit... and draws inferences from their magnitudes as to the relative profitability of investments... does so at his own peril.

Similar sentiments were expressed by many of the early researchers in this area such as Swalm (1958), Solomon (1966), Sarnat and Levy (1969), Livingstone and Salamon (1970), and Salamon (1973).[2] As late as 1983, Fisher and McGowan (1983, p. 90) could summarise this literature in the following terms:

... there is no way in which one can look at accounting rates of return and infer anything about relative economic profitability... The economic rate of return is difficult—perhaps impossible—to compute for entire firms. Doing so requires information about both the past and the future which outside observers do not have, if it exists at all.

The validity of the position advanced by Harcourt and others, however, has been challenged. Kay (1976, p. 459) developed a mathematical model from which he was able to conclude that:

... Harcourt's warning... is much over-dramatized... it follows from the nature of double-entry book-keeping [that]... [d]istortions in one year will be offset in due course by opposite distortions... The accountant's rate of profit, measured over a period of years, will be an acceptable indicator of the true rate of return: it is over a single year that it may prove to be seriously misleading.

*The authors are, respectively, senior lecturer in accounting at the Australian National University and professor of accounting at the University College, Aberystwyth. They gratefully acknowledge the assistance of Mr. Peter Campbell in collecting the data on which the empirical work of the paper is based. The constructive comments and criticisms of three anonymous referees significantly enhanced both the tightness of argument and the paper's presentation. However, in acknowledging the referees' assistance, we should like to make it clear that any remaining errors are the sole responsibility of the authors.

[1] The terms 'discounted cash flow return', 'internal rate of return' and 'economic return' are used interchangeably in this paper.

[2] Much of this literature is reviewed in Luckett (1984).

Similar arguments were presented by Peasnell (1982), who provided a discrete generalisation of Kay's (1976) continuous time results. However, Wright (1978) and, to a lesser extent, Salamon (1982) questioned, on several grounds, the usefulness of the conclusions reached by Kay and Peasnell. Wright (1978, p. 466) summarised the first of these grounds in the following terms:

> Whilst the nature of double-entry book-keeping ensures that *profits* cannot be misstated in the long run, there is nothing in double-entry book-keeping which automatically corrects distortions in book value. Hence *profitability*, which is profit divided by the book value of assets, can be over- or understated for an indefinitely long period.

In other words, whilst double-entry book-keeping places limits on the extent to which the intertemporal distribution of profits can be distorted, its potential for restricting the manipulation of book rates of return is much more limited. Hence, as Wright (1978, pp. 467–468) notes, it is doubtful if Kay's analysis frees us from Harcourt's discouraging conclusion.

A second issue raised by Wright (1978, p. 465) relates to the estimated economic rate of return obtained by Kay (1976, pp. 452–453) for UK manufacturing industry covering the period from 1960 to 1969. Wright observes that the estimate reported in Kay's paper will be correct '... if, and only if, the opening and closing [accounting] book values happened to coincide with the economic values of the net assets ...', a point subsequently acknowledged by Kay (1978, p. 470).[3] In large measure, the need to employ this assumption stems from the fact that Kay is concerned with estimating *ex post* accounting and economic rates of return.[4] However, as Wright (1978, p. 465) notes, while such information might be of some interest to an 'economic historian... One must doubt the relevance, for any contemporary purpose, of a single rate of return which represents the overall performance to date of a business firm founded in, say, the year 1900'.

It is probably because of these limitations that developments in the United States have taken a somewhat different direction (Salamon, 1982,

p. 292). In a series of seminal papers, Ijiri (1978, 1979, 1980) introduced what has come to be known as the 'corporate recovery rate', defined as the ratio of cash recoveries during a period to gross investments outstanding during the period. He was able to show that under certain conditions, a firm's corporate recovery rate converges to a constant which is functionally related to its internal rate of return. Hence, provided the assumptions behind the model are empirically sustainable, the corporate recovery rate can be used to estimate the economic return a firm is likely to earn in future periods. As such, Ijiri's model appears to circumvent the general thrust of the criticisms levelled at the Kay analysis.

Unfortunately, the assumptions which lie behind Ijiri's model are quite restrictive. Salamon's (1982, p. 294) generalisation of Ijiri's model, for example, is based on the following assumptions:

> The model assumes that the firm is a collection of projects that have the same useful life, same cash flow pattern, and same IRR. The collection is assembled by having the firm acquire a project at the end of each year. The project acquired by the firm in any year is different from the projects acquired in other years only with respect to scale. In particular, the model assumes that the firm has a constant rate of growth in real gross investment... The cash inflows (outflows) generated (required) by firm projects occur only at discrete points in time which are one year apart... The firm operates in an environment in which there is a constant rate of change in the level of all prices.

We do not believe it unreasonable to suggest that most, if not all, of these assumptions place severe limits on the credibility of the resultant future cash flow estimates.[5] As a consequence, estimates of the internal rate of return would be tainted by doubts about the validity of the underlying assumptions. Indeed, given these assumptions, Ijiri's corporate recovery rate may not have the utility which it at first appears to possess. However, given its potentially important role in capital market allocation, the objective of producing a theoretically defensible statistic from which an estimate of the economic return a firm is likely to earn in future periods is worth pursuing.

In light of these remarks and those of Wright (1978), and given the focus on accounting rates of return as a measure of potential and/or future profitability, we have chosen to take the different, and probably more useful, approach of formulating procedures which determine whether the *ex post* ARR is likely to provide a clue as

[3]See Steele (1986, p. 2) for a more technically correct specification of this requirement.

[4]Even if we abstract from this problem, the Kay (1976) analysis is faced with the additional difficulty that it effectively assumes firm cash flows accrue in 'lumps' at the end of each year. However, when cash flows accrue on a continuous basis, which as Salamon (1982, p. 297) notes is a more likely scenario for most large corporations, McCrae and Tippett (1987) and Tippett (1990) have shown that, due to the absence of complete information, even *ex post* returns become the subject of a probability distribution. Tippett (1990) has shown that, in such circumstances, estimating procedures such as those used in Kay (1976) are likely to over-estimate returns.

[5]See Brief (1985), Gordon and Hamer (1988), Salamon (1985, 1988) and Stark (1989) for further criticisms and refinements of Ijiri's model.

to the economic return that a firm will earn over its remaining life. If the two returns are closely aligned, then we have a powerful justification for the increasingly extensive use to which the ARR is being put. The difficulty is, of course, that the economic return depends on a set of as yet unrealised cash flows and as such is unobservable. However, if a corporation's future cash flows are generated by some form of stochastic process, then the probability density function induced by this process can be used to assess whether the ARR does, in fact, provide a reasonable reflection of the economic return the corporation is likely to earn over its remaining life.

The remainder of the paper is structured as follows. The second section begins by outlining a simple discrete time binomial model of firm cash flows. However, since, as Salamon (1982, p. 297) notes, for most large corporations '... cash flows are approximately continuous ... ', we then generalise the discrete time model to its continuous time equivalent. In the spirit of Ijiri (1980), Salamon (1982), Steele (1986) and Gordon and Hamer (1988), the third section illustrates how the statistical model may be applied. Specifically, *ex post* cash flow data relating to five large Australian companies are used to estimate the required statistical model for each company. The estimated model is then used to assess whether the *ex post* ARR can be regarded as a satisfactory proxy for the economic return the company is likely to earn over the remainder of its life. The final section contains some summary comments.

In this instance, an alternative and far more realistic approach is to assume that the firm's cash flows are a stochastic function of time.[7] Basing our analysis on the work of Cox and Miller (1965, pp. 205–208), Kac (1947) and Okunev and Tippett (1989/90), we thus define C as a project's *accumulated* cash flow as at time t. At time $t + \Delta t$, suppose the firm's accumulated cash flow will either increase to $C + \Delta C$ or decrease to $C - \Delta C$. Further, let the probability of an upward or downward move in the firm's accumulated cash flow be, respectively:

$$\frac{1}{2}\left[1 + \frac{j\delta + \gamma M(\Delta t)}{\delta M}\right] \quad \text{or} \quad \frac{1}{2}\left[1 - \frac{j\delta + \gamma M(\Delta t)}{\delta M}\right]$$

where $\Delta C = \delta > 0$, γ and M are parameters, j is the net number of *positive* cash flows as at time t, and:

$$\frac{-[\delta + \gamma(\Delta t)]}{\delta} \cdot M < j < \frac{[\delta - \gamma(\Delta t)]}{\delta} \cdot M$$

if the respective probabilities are to be bounded between zero and one. Note that, since $j\delta = C$, under this model the probability of an upward or downward move in the firm's cash flows depends, at least to some extent, on the accumulated level of previous cash flows. Intuitively this is what one would expect. It also follows from the above specification that the expected change in the firm's accumulated cash flow (per unit time) over the interval $[t, t + \Delta t]$ is:

$$\frac{E(\Delta C)}{\Delta t} = \frac{\frac{1}{2}\left[1 + \frac{j\delta + \gamma M(\Delta t)}{\delta M}\right]\delta - \frac{1}{2}\left[1 - \frac{j\delta + \gamma M(\Delta t)}{\delta M}\right]\delta}{\Delta t} \tag{1}$$

A cash flow and statistical model

Almost exclusively, previous research has used non-stochastic approaches for determining the relationship between accounting and economic rates of return. When the objective is to determine the relationship between *ex post* returns, such non-stochastic or certainty approaches are probably reasonable.[6] However, when we are concerned with assessing the capacity of an *ex post* ARR to provide guidance on the likely value of an as yet unrealised economic return, it is questionable whether the certainty assumption can be sustained.

E being the expectations operator, taken at time t. Using the fact that $j\delta = C$ and letting $M(\Delta t) = \beta^{-1}$ for β a parameter, it then follows that (Kac, 1947, p. 380; Okunev and Tippett, 1989/90, pp. 163–165):

$$\frac{E(\Delta C)}{\Delta t} = \gamma + \beta C$$

In other words, under this model the firm's expected periodic cash flow is assumed to consist of a 'drift' term, $\gamma(\Delta t)$, and a component, $\beta C(\Delta t)$, which is dependent on the accumulated level of previous periods' cash flows. Amongst other things, the drift term captures the fixed income and expense components of the firm's cash flows. These

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[6]Although never stated, non-stochastic approaches underpin practically all the work undertaken in this area. Good examples are Kay (1976), Peasnell (1982) and Salamon (1982). In light of the Wright (1978) criticisms and those contained in footnote four above, the certainty assumption is of dubious validity, even on an *ex post* basis.

[7]When there is incomplete information about a corporation's cash flows, McCrae and Tippett (1987), Kelly and Tippett (1989) and Tippett (1990) contain details of methods which may be employed to estimate *ex post* returns.

include such things as the investment income from fixed income securities and 'fixed' costs such as rates, insurance and rent.

To compute the variance (per unit time) of the change in the firm's periodic cash flow, we have:

$$\frac{\text{Var}(\Delta C)}{\Delta t} = \frac{[\delta - (\gamma + \beta C)\Delta t]^2 \left[1 + \dfrac{j\delta + \gamma M(\Delta t)}{\delta M}\right]}{2\Delta t}$$

$$+ \frac{[-\delta - (\gamma + \beta C)\Delta t]^2 \left[1 - \dfrac{j\delta + \gamma M(\Delta t)}{\delta M}\right]}{2\Delta t} \quad (3)$$

Following Cox and Miller (1965, p. 206), suppose we let $\delta = \sigma\sqrt{\Delta t}$, for σ a parameter, and recalling that $j\delta = C$ and $M(\Delta t) = \beta^{-1}$, it then follows:

$$\frac{\text{Var}(\Delta C)}{\Delta t} = \sigma^2 - \gamma^2(\Delta t) - \beta^2(\Delta t) \quad (4)$$

or that:

$$\underset{\Delta t \to 0}{\text{Limit}} \frac{\text{Var}(\Delta C)}{\Delta t} = \sigma^2 \quad (5)$$

Hence, in continuous time, $\sigma^2 dt$ represents the variance of the instantaneous change in the firm's accumulated cash flow.

Wold (Cox and Miller, 1965, pp. 286–297) has shown that stationary processes, including the one considered above, can be split into two components, one purely deterministic and the other purely indeterministic or stochastic. Using this result, we decompose the firm's periodic cash flow into two 'orthogonal' components, namely:

$$\Delta C(t) = [\gamma + \beta C(t)]\Delta t + \Delta W(t) \quad (6)$$

The first term on the right-hand side of the above expression is the expected cash flow over the interval $[t, t + \Delta t]$. The second term is the stochastic component and will take on the value $\Delta W(t) = \delta - [\gamma + \beta C(t)]\Delta t$ if the firm earns a positive cash flow, or $\Delta W(t) = -\delta - [\gamma + \beta C(t)]\Delta t$ if the cash flow is negative. Taking limits across this expression, it follows that:

$$dC(t) = [\gamma + \beta C(t)]dt + dW(t) \quad (7)$$

where $dW(t)$ is distributed with zero mean and instantaneous variance $\sigma^2 dt$. In what follows, however, we make an allowance for systematic growth in the drift term of the above model. This implies that we set $\gamma = \alpha e^{kt}$, for k a parameter. However, since corporate growth rates depend on a variety of factors, including such things as industry affiliation and operating risk, there is no reason to believe that k should necessarily be constant across firms. In any event, with this adjustment the model becomes:

$$dC(t) = [\alpha e^{kt} + \beta C(t)]dt + dW(t) \quad (8)$$

The discrete version of this model was first proposed, in a different context, by P. and T. Ehrenfest (Okunev and Tippett, 1989/90, pp. 163–164). The Ehrenfest model was later extended to a continuous time framework by Uhlenbeck and Ornstein (1930). The above formulation is a modification of the original Ornstein-Uhlenbeck analysis.

While, as we shall see in the next section, the above model appears to provide a satisfactory fit to the cash flow data of a selection of large Australian public companies, it bears emphasising that potentially more realistic models can be developed using a similar, though more complicated, methodology than that outlined above. Specifically, by increasing the number of states beyond the simple 'up, down' paradigm used above and allowing both the magnitude of the periodic cash flows and their probabilities to vary in a predetermined way, it is possible to build a variety of autocovariance strucutures into the generation of the firm's periodic cash flow (Cox and Miller, 1965, chapter 3 and pp. 296–301). Invariably, these models must be restricted to 'discrete time' and they tend to be somewhat unwieldy and complicated. However, the development and testing of such models does represent a potentially profitable area for further research.[8] Given the introductory nature of the present work, however, with one exception, we will not treat these models further.

There is one further stochastic process which does warrant detailed consideration. We refer, of course, to the well-known geometric Brownian motion of Black and Scholes (1973). Under this model the *growth rate* in the total cash flow, $C(t)$, would assume the following form:

$$\frac{dC(t)}{C(t)} = \mu dt + dZ(t) \quad (9)$$

where μdt is the expected instantaneous growth rate in the total cash flow and $dZ(t)$ has zero mean and instantaneous variance $\eta^2 dt$. Cox, Ross and Rubinstein (1979) or Cox and Rubinstein (1985, chapter 5) contain an excellent summary of the

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[8] It may well be, for example, that the discrete time cash flow/probability structure implied by an empirically estimated autoregressive model is inconsistent with the type of industry in which a firm operates and/or the production technology available to it. Hence, the approach taken in this section could well help empirical researchers to determine the plausibility of an empirically fitted autoregressive model. However, whilst *a*utoregressive *i*ntegrated *m*oving *a*verage, or ARIMA models are a '... useful class of processes ...' which provide '... a good fit to many different types of time series ...', they should generally only '... be considered when more than about 50 observations are available' (Chatfield, 1984, p. 79). In Australia and the United Kingdom, comprehensive corporate financial reports are published on an annual basis, and so, if this is the data source to be used, then it would require 50 years of data to implement such models. The difficulties associated with estimation over such a long time period are well documented in the literature. See Karlin and Taylor (1981, p. 356) for some further discussion of this issue.

discrete time binomial model implied by this stochastic process. In the present context, however, there are several difficulties with this model. Firstly, it is doubtful if the expected growth rate can be an intertemporal constant. In the early years of an asset's life, for example, the periodic cash flow, $dC(t)$, is likely to be large in relation to the accumulated cash flow, $C(t)$, especially if the asset is new. As the asset ages and $C(t)$ grows, the ratio will decline. Secondly, under this model the accumulated cash flow, $C(t)$, can never be negative (Hull, 1989, pp. 82–88). The recent demise and subsequent insolvency of several large Australian, British and US corporations suggests that constraining $C(t)$ to be positive is an unrealistic assumption. Finally, it is often necessary to determine the distributional properties of the present value of the cash flow equation. As we shall see in the ensuing discussion, this involves taking an 'integral transform' of the cash flow equation (9). Except for some fairly trivial and unrealistic scenarios, the integral corresponding to equation (9) is intractable. Hence, for these and the reasons alluded to earlier, we restrict our attention to the model formalised through equation (8).

Using the procedures laid down in Hoel, Port and Stone (1972, p. 185), it may be shown that the solution to the stochastic differential equation (8) is:

$$C(t) = \frac{\alpha(e^{kt} - e^{\beta t})}{k - \beta} + e^{\beta t} \int_0^t e^{-\beta s} dW(s) \quad (10)$$

Further, using Hoel, Port and Stone (1972, p. 133), it follows that the accumulated cash flow is normally distributed with mean:

$$E[C(t)] = \frac{\alpha(e^{kt} - e^{\beta t})}{k - \beta} \quad (11)$$

the expectation being taken at time zero. Similarly, for the variance of the accumulated cash flow we have (Hoel, Port and Stone, 1972, p. 142):

$$\text{Var}[C(t)] = \frac{\sigma^2}{2\beta} (e^{2\beta t} - 1) \quad (12)$$

where Var(.) is the variance of the relevant random variable.

Our primary interest, however, is in the project's economic or internal rate of return. Hence, following Kay and Mayer (1986, p. 200) and Marsh and Merton (1987, p. 6), we note that the net present value of the instantaneous cash flow stream, $dC(t)$, is given by:

$$F(i) = \int_0^\infty e^{-it} dC(t) - H \quad (13)$$

where H is the initial or time zero cash outlay. Using equations (8) and (13) and integration by parts, it can be shown that $F(i)$ is normally

distributed with mean (Hoel, Port and Stone, 1972, p. 134):

$$E[F(i)] = \frac{i\alpha}{(i - \beta)(i - k)} - H \quad (14)$$

and variance:

$$\text{Var}[F(i)] = \frac{i\sigma^2}{2(i - \beta)^2} \quad (15)$$

The results formalised through equations (13), (14) and (15) provide the means by which to assess the significance of potential differences between the *ex post* ARR and the economic return. Specifically, the economic return is defined implicitly by the equation $F(i) = 0$; that is, by the root of equation (13). From equations (14) and (15), it then follows:

$$
\begin{aligned}
z &= \frac{F(i) - E[F(i)]}{\sqrt{\text{Var}[F(i)]}} \\
&= \frac{\sqrt{\frac{2}{i}} \left[\dfrac{H(i - \beta)(i - k) - i\alpha}{(i - k)} \right]}{\sigma}
\end{aligned} \quad (16)
$$

is distributed as a standard normal variate. Now suppose that the parameters k, α and β and the variance σ^2 of the cash flow equation (8) are known, or can be reliably estimated. Then the above result can be used in conjuction with these parameters to determine the probability that the net present value of the future cash flows will be at most zero, where the *ex post* ARR is used as the discount rate. Since the economic return is implicitly defined by the requirement that the net present value is zero, this strategy provides an indirect test of whether the *ex post* ARR is a reasonable proxy for the firm's economic return. It is this procedure which is adopted in the empirical analysis which follows.

Five case studies

To illustrate how the above procedures can be applied, we collected annual cash flow data for five large Australian listed companies for the fifteen year period from 1973 to 1988.[9] The definitions of the cash flow and accounting rate of return are the 'clean surplus' measures employed in Tables 1 and 2 of Kay (1976, pp. 452–453). For each company, a maximum likelihood non-linear regression procedure was used to estimate the parameters, α, β, k and σ^2 of equation (8) (White, 1978; White and

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[9] Ijiri (1980), Salamon (1982), Steele (1986) and Gordon and Hamer (1988) amongst others all use small samples to illustrate how their models may be applied. In similar vein, the purpose of this section is firstly, to show how empirical estimates of the parameters implied by the model developed earlier may be obtained and, secondly, to show how the estimated parameters may then be used to test for significant differences between the likely economic return and the ARR.

Table 1

Parameter Estimates and z Scores for Difference Between the Internal Rate of Return and the Accounting Rate of Return

Company	α	β	k	R^2	Estimated IRR	Estimated ARR	z
1. Boral Ltd	0.1053 (2.13)^u	−0.1915 (−0.98)	0.1534 (3.94)*	0.3197	0.1742	0.1436	43.74*
2. Bramb Ind Ltd	0.6085 (3.62)*	−1.1203 (−2.82)^t	0.1125 (15.54)*	0.3934	0.3465	0.2037	8.33*
3. Brok Hill Prop Ltd	0.6594 (2.45)^t	−0.5624 (−2.06)^u	0.1380 (6.48)*	0.3313	0.1955	0.1209	56.41*
4. TNT Ltd	0.2987 (2.69)^t	−0.2026 (−1.30)	0.0813 (3.13)*	0.1107	0.1392	0.4577	15.96*
5. Woolworths Ltd	0.2714 (2.77)^t	−0.1026 (−0.75)	0.0202 (0.28)	0.1044	0.1482	0.2005	0.32
Average Statistics					*0.2007*	*0.2253*	

u significant at the 10% level
t significant at the 5% level
*significant at the 1% level

Horsman, 1986, pp. 103–108).[10] These estimates were then used in conjunction with equation (14) and the procedures laid down in the previous section and the Appendix, to estimate the IRR. H was taken as the corporation's share price at the beginning of the fifteen year period.[11] Finally, the ARR for each corporation was estimated by averaging the ARR over the five year period ending in 1973.[12] This was done to overcome the concern referred to earlier; namely that 'creative' accounting practices may distort reported profits in the

'short run' (Wright, 1978, pp. 466–467; Kay, 1978, p. 469). Note that there is no overlap between the period over which the ARRs were computed and the period over which the parameters of the modified Ornstein-Uhlenbeck model (equation 8) were estimated. This is consistent with our desire to test whether the *ex post* ARR is likely to provide a clue as to the economic return a firm will earn over its remaining life.

Given this data, the z scores implied by equation (16) were computed for each company. The results are contained in Table 1.[13] Since four of the five z scores are different from zero at any reasonable

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[10]More detailed information on the statistical procedures employed can be found in the Appendix.

[11]We also adjusted each corporation's 1973 balance sheet to an estimated replacement cost basis using the Price Index of Materials Used in Manufacturing Industry and its antecedent indices (Australian Bureau of Statistics, 1988, pp. 685–687). Under this procedure, H was estimated as the net asset (replacement cost) value per share. The rationale for adopting this approach rests with Baumol's theory of contestable markets, details of which are to be found in Baumol, Panzar and Willig (1982). Specifically, if rents exist, then they will be incorporated into the firm's share price and we would expect there to be a difference between the firm's ARR and its economic return. Using replacement cost net asset values, however, overcomes this problem. For the sample utilised in this study there were no significant differences between the results using the estimated replacement costs and the share prices.

[12]Two other ARR measures were also used in our tests. The first was the ARR for the 1973 fiscal year. The second was a weighted average of the ARRs from 1969 to 1973. The weights were determined using the sum-of-years'-digits formula. Hence the 1973 ARR received a 1/3 weighting, whilst the 1969 ARR received a 1/15 weighting. The rationale for this approach is that users of financial statements will probably weight more recent ARRs more heavily than those of earlier periods (Kay, 1976; Peasnell, 1982). However, there were no significant differences between the results obtained using these alternative approaches and the results reported in the text.

[13]Since we are here dealing with a non-linear regression problem, the usual Durbin–Watson test for autocorrelation does not apply. Reasons for this are to be found in Durbin and Watson (1950, p. 410); but see also Durbin and Watson (1951). In an effort to address this issue, two tests were applied to the observed residuals. The first is the Wald-Wolfowitz Runs test which, in the present context, assesses whether the 'process' generating the residuals is random (Conover, 1971, pp. 350–356). The second test is based on a Durbin–Watson 'like' statistic and is due to Young (1941). As such, it is a test of first order autocorrelation. The sum result of these tests is that the null hypothesis of randomness in the residuals could not be rejected at any reasonable level of significance. It is also worth noting that, for four of the five regressions summarised in Table 1, significant t values are associated with at least two of the estimated parameters. In three of the five cases, the R^2 statistic exceeds 30%, whilst the average R^2 statistic across all five regressions is 25.19%. It is worth noting that Lev's (1989, p. 158 *et seq*) summary of two decades of earnings related research in accounting indicates that R^2s in excess of 15% are extremely rare. Indeed, most of the studies summarised by Lev (1989) reported R^2 statistics between 2 and 7%. Further, the results reported in Table 1 compare favourably with other Australian financial time series regressions (Ball, Brown and Officer, 1989, pp. 65–66).

level of significance, *for these firms* there must be considerable doubt as to whether the *ex post* ARR bears any correspondence to the prospective economic return or IRR.[14]

Against this, however, it might well be argued that a statistically significant z score, as we have computed it, does not necessarily imply a large difference between the two return measures. In this respect, it warrants emphasising that we have estimated the market's cash flow expectations using past realisations. It is possible, of course, that the market's *ex ante* expectation of the variance in firm cash flows is much larger than that implied by the realised cash flows. In other words, there is a 'joint hypothesis', not just about how close the ARR is to the *ex ante* IRR, but about cash flow expectations, the term structure and required risk premia, etc. Indeed, the use of past realisations for parameter estimation, especially when there appears to be some dispute as to what is the appropriate definition of 'cash flow' (Stark, 1989), could mean that our analysis suffers from the familiar 'errors in variables' problem (Johnston, 1972, pp. 281–291). However, measurement problems of some description affect all prior empirical work in this area (Kay, 1976, pp. 452–453; Wright, 1978, p. 465; Salamon, 1982, p. 297; Gordon and Hamer, 1988, pp. 514–515). Although the present work is no exception to this rule, we attempted to minimise its effect by adopting 1973 as a 'test date' and then estimating the cash flow model over the fifteen year period ending 1988.

Secondly, it may well be argued that a statistical criterion does not make much sense in the present context. For example, even though the reported z score for Boral Ltd is significant at the one percentage point level, the actual difference between the two return metrics is only about 3%. Some may argue that this is not really enough to worry about. McCrae and Tippett (1987, p. 219), however, have shown that small variations in the returns earned by assets can induce large differences in terminal wealth, even over a comparatively short period of time.

Finally, it is worth noting that, if one accepts the financial accounting disclosure model laid down by Demski (1973) and Demski and Sappington (1990), the discrepancies which seem to exist for these companies between the ARR and the economic return are hardly surprising. In the model advanced in these papers, the disclosure of accounting profit is shown to operate through an 'information structure' which carries a joint signal concerning the likely magnitude of the corporation's future economic return. Unfortunately, reporting the 'true' periodic accounting profit may 'garble'

this signal and, as a consequence, economic agents may obtain a 'fuzzy' image of the corporation's likely economic value. Demski and Sappington (1990, p. 377) show that it is possible to resolve this problem by disclosing a *conservative* distortion of the 'true' accounting profit figure. In this respect, it is interesting to note that for three of the five corporations reported in Table 1, the ARR is lower than the estimated economic return.[15] However, since the purpose of this section is to illustrate the statistical procedures outlined in the previous section, the empirical evidence presented here is anecdotal at best. More exhaustive testing is obviously needed if concrete conclusions are to be reached. Suffice it to say, the procedures laid down earlier and in the Appendix could be used to test the Demski-Sappington hypothesis.

Summary comments

Accounting rate of return (ARR) and discounted or internal rate of return (IRR) measures have traditionally been used to assess the relative profitability of corporations and individual investment projects.[16] The present paper adopts the different, and hopefully more useful, approach of formulating procedures which can be used to determine whether the *ex post* ARR is likely to provide a clue as to the economic return a firm will earn over its remaining life. Our approach assumes that firm cash flows are generated by a stochastic function of time. Using this assumption, we derive the probability density of the difference between the economic and accounting rate of return and then outline efficient procedures for obtaining reliable estimates of the relevant cash flow parameters.

Following Ijiri (1980), Salamon (1982), Steele (1986) and Gordon and Hamer (1988), the procedures are illustrated by using annual cash flow data for five large Australian listed corporations for the fifteen year period from 1973 to 1988. Standard normal (z) scores between the *ex post* ARR and the likely economic return indicate that for four of these five companies, the ARR is a potentially poor proxy for the future economic return.

An obvious area for further research is the application of the above analysis to a larger sample. This research should provide more concrete evidence on the relationship between the ARR and prospective economic return, both at the level of the individual corporation and, more importantly, at the aggregate level. It should also cast light on the Demski-Sappington hypothesis; namely, that firms are likely to report a downward biased distortion of the 'true' periodic accounting profit figure.

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[14]The z scores using the replacement cost net asset values were 46.43 (Boral), 7.72 (Brambles), 48.28 (Brok Hill), 5.42 (TNT) and −0.23 (Woolworths).

[15]See Demski and Sappington (1990, p. 381) for a more detailed discussion of the implications of their model for the ARR/IRR literature.

[16]See Bain (1968, pp. 402–412) and McDougall and Round (1986, pp. 131–166) for examples of this literature.

MATHEMATICAL APPENDIX

Parameter estimation of the modified Ornstein-Uhlenbeck Process

To implement the significance test implied by equation (16), it is necessary that reliable estimates of the parameters α, β, σ^2 and k are available. In this respect, it is important to note that (Lo, 1988, p. 232):

> ... estimating parameters of a ... [continuous] process by employing maximum likelihood upon a discretization of the stochastic differential equation need not yield consistent estimators.

To illustrate, consider the small but non-infinitesimal time interval $[t, t + \Delta t]$. Then using equation (10), it may be shown:

$$\Delta C(t) = \frac{\alpha e^{kt}(e^{k\Delta t} - e^{\beta \Delta t})}{k - \beta} + (e^{\beta \Delta t} - 1)C(t)$$

$$+ e^{\beta(t + \Delta t)} \int_t^{t + \Delta t} e^{-\beta s} dW(s) \qquad \text{(A1)}$$

where $\Delta C(t) = C(t + \Delta t) - C(t)$ is the first difference in the firm's cash flow function. Note that across contiguous and equally spaced time intervals, the error term in the above expression,

$$\epsilon_t = e^{\beta(t + \Delta t)} \int_t^{t + \Delta t} e^{-\beta s} dW(s),$$

has the following property:

$$\text{Cov}(\epsilon_j, \epsilon_k) = \begin{cases} 0 & \text{if } j \neq k \\ \dfrac{\sigma^2}{2\beta}(e^{2\Delta t} - 1) & \text{if } j = k \end{cases} \qquad \text{(A2)}$$

In other words, the error term is serially uncorrelated and has homoscedastic variance (Wonnacott and Wonnacott, 1970, pp. 51–52). Given this result, suppose we apply a maximum likelihood regression procedure to the 'discrete' version of equation (8):

$$\Delta C(t) = (ae^{kt})\Delta t + bC(t)\Delta t + \epsilon_t \qquad \text{(A3)}$$

It can then be shown that while this procedure provides an efficient estimate of k, details of which are to be found in White and Horsman (1986, pp. 103–108), the estimates of α and β will be inconsistent, since from the above analysis it follows that (Johnston, 1972, p. 271):

$$\plim_{n \to \infty} \hat{a} = \frac{\alpha(e^{k\Delta t} - e^{\beta \Delta t})}{(k - \beta)\Delta t} \neq \alpha$$

and:

$$\plim_{n \to \infty} \hat{b} = \frac{1}{\Delta t}(e^{\beta \Delta t} - 1) \neq \beta \qquad \text{(A4)}$$

where n is the number of observations over which the parameters are estimated. Accordingly, we solve the equation (A4) and adopt the following estimates of the parameters:

$$\hat{\beta} = \frac{1}{\Delta t} \log[1 + \hat{b}(\Delta t)]$$

$$\hat{\alpha} = \frac{\hat{a}(\hat{k} - \hat{\beta})\Delta t}{e^{k\Delta t} - e^{\beta \Delta t}}$$

and:

$$\hat{\sigma}^2 = \frac{2\hat{\beta}\text{Var}(\epsilon_t)}{e^{2\beta \Delta t} - 1} \qquad \text{(A5)}$$

This procedure provides consistent and efficient estimates of the relevant parameters.

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Contents

Model Predictions and Auditor Assessments of Going Concern Status

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Abstract—This paper compares the predictions of a bankruptcy prediction model and the assessments of auditors on the going concern status of a sample of 165 bankrupt companies and 165 matched non-bankrupt companies. Data from US companies for the period 1978 to 1985 were used. Probit analysis (with the weighted exogenous sampling maximum likelihood procedure) was applied to estimate the model parameters. The Lachenbruch U method hold-out accuracy rates of the model are 85.45% for bankrupt firms, 100.00% for non-bankrupt firms, and 99.91% overall. The corresponding accuracy rates of the auditors based on their audit reports are 54.37% for bankrupt firms, 100.00% for non-bankrupt firms, and 99.73% overall. The sensitivity of optimal cut-off points to misclassification costs of Type I and Type II errors was also considered. Results of the study suggest that bankruptcy prediction models can be useful to auditors in making going concern assessments. Further, such models can serve as analytical tools and defensive devices.

Under the going concern concept, an entity is assumed to be a going concern only in the absence of information to the contrary. Although the circumstances that constitute such information may be listed (see, for example, Miller, 1966), it is extremely difficult to lay down guidelines as to how these circumstances should be assessed. In a recent study, Menon and Schwartz (1987) found that only 63 out of 147 bankrupt companies (i.e., less than 43%) were qualified on a going concern basis prior to bankruptcy. This poor field record demonstrates the difficulty of assessing an entity's going concern status.

In the United States prior to 1981 there was little guidance in professional pronouncements to help an auditor in assessing an entity's going concern status. In view of this, Statement on Auditing Standards (SAS) No. 34 (AICPA, 1981) was issued in March 1981 to provide guidelines for the auditor when assessing the going concern status of his client. However, as pointed out by Killough and Koh (1986), the guidelines contained in SAS No. 34 are too general and ambiguous and hence cannot serve as a meaningful guide. In fact, Williams (1984) found that, despite SAS No. 34, the partners and owners of CPA firms in his sample used completely subjective evaluation methods based merely on their knowledge of the client, the industry and the economy when making going concern assessments.

In February 1987, a proposed SAS (AICPA, 1987) was issued that would replace SAS No. 34.

Although the proposed SAS required a more active auditor involvement in assessing an entity's continued existence, its guidelines were essentially the same as those contained in SAS No. 34 and therefore do not provide more specific and adequate guidance (Koh and Killough, 1988). In August 1988, the proposed SAS was issued with some minor amendments as SAS No. 59 (AICPA, 1988).

In view of the difficulty in assessing going concern status and the inadequacy of external auditing guidelines, several researchers have advocated the use of objective statistical prediction models. The aim of this paper is to compare the model predictions of the bankruptcy prediction model constructed in this study with the auditors' assessments of the going concern status of 330 sample firms. From the results presented, implications on the potential usefulness of bankruptcy prediction models to auditors in making going concern assessments are drawn.

A brief literature review

In 1974, Altman and McGough pioneered the application of bankruptcy prediction models in auditing when they suggested that the models and methodologies used in bankruptcy prediction research could be applied to the prediction of going concern continuity. Since then, several studies have dealt with prediction models in the going concern context (e.g., McKee, 1976; Levitan and Knoblett, 1985; Mutchler, 1985; Menon and Schwartz, 1987; Dopuch, Holthausen and Leftwich, 1987; and Koh and Killough, 1990).

The idea that objective prediction models can be constructed to aid auditors in making going

concern assessments is appealing. However, as pointed out by some researchers, there may be potential problems with existing going concern/ bankruptcy prediction models. These problems are well documented in the literature and include problems associated with the application of discriminant analysis, choice-based sample designs, and model testing and validation (see, for example, Eisenbeis, 1977; and Zavgren, 1983). Various solutions, including probit analysis, weighted adjustment procedures, and the Lachenbruch U method, have also been suggested in the literature (see for example, Zmijewski, 1984; and Koh, 1988).

In this study, the following methodology was employed in constructing and validating a bankruptcy prediction model. Basically, the model was constructed with probit analysis using the WESML (weighted exogenous sample maximum likelihood) procedure on a matched sample of bankrupt and non-bankrupt firms. This procedure incorporates the sample and population proportions of bankrupt and non-bankrupt firms in the model construction process by weighting the log-likelihood function. This is important given that in the matched sample used in this study, there are equal numbers of bankrupt and non-bankrupt firms while in the real-life population of firms, the number of bankrupt firms is much smaller than the number of non-bankrupt firms. Thus, some form of adjustment or weighting is desirable in constructing the model. More details of probit analysis with the WESML procedure can be found in Zmijewski (1984). For this study, the LIMDEP software (developed by Dr. Greene of New York University) is used in the analyses.

The effectiveness of the model in predicting going concern status was evaluated by first computing its hold-out accuracy rates with the Lachenbruch U method and then comparing these accuracy rates to those of the auditors based on their audit reports for the sample firms. Basically, under the Lachenbruch U method, a probit model is constructed with all firms in the sample except one (referred to as the held-out firm). The constructed model is then applied on the held-out firm and the correctness of the classification is noted. This process is repeated until every firm in the sample has the opportunity to be the held-out firm. The hold-out accuracy rates are then computed on the basis of the classification results of the held-out firms. A more detailed description of this methodology can be found in Lachenbruch (1967) and Koh (1988).

The next section discusses the construction and validation of the bankruptcy prediction model. It also presents the accuracy rates of the model predictions and auditor assessments of the going concern status of the 330 sample firms.

The bankruptcy prediction model

Sample Data

A survey of the *Predicast's F & S Index of Corporate Changes* (Predicast, various issues from 1980 to 1987) yields a total of 165 non-financial COMPUSTAT companies that filed for bankruptcy during the period 1979 to 1985. These companies comprise the sample of bankrupt firms that is used in the construction of the bankruptcy prediction model. Each bankrupt firm is matched with a non-bankrupt firm (i.e., a going concern) on the basis of industry, size (i.e., total assets) and fiscal year. Thus, the total estimation sample consists of 330 companies.

For each of the 330 sample companies, the following financial ratios are computed from the COMPUSTAT tapes:

(1) quick assets to current liabilities (QACL),
(2) market value of equity to total assets (MVTA),
(3) total liabilities to total assets (TLTA),
(4) interest payments to earnings before interest and tax (IEBT),
(5) net income to total assets (NITA), and
(6) retained earnings to total assets (RETA).

Details on the formulas used to compute the ratios can be found in Table 1. The sample data were extracted in mid-1987 from the last available financial statements preceding bankruptcy for bankrupt firms and from the corresponding matched financial statements for non-bankrupt firms. Thus, the sample data relate to financial statements of the sample companies from 1978 to 1985. Some descriptive statistics of the sample data are given in Table 2.

Table 1
Definition of Variables

1. Quick Assets to Current Liabilities (QACL) = (Cash + Accounts Receivable)/Current Liabilities
2. Market Value of Equity to Total Assets (MVTA) = (Share Price × Number of Shares)/ Total Assets
3. Total Liabilities to Total Assets (TLTA) = (Total Assets − Common Equity − Preferred Stock)/Total Assets
4. Interest Payments to Earnings before Interest and Tax (IEBT) = Interest Payments/(Interest Payments + Earnings before Tax)
5. Net Income to Total Assets (NITA) = Net Income after Tax/Total Assets
6. Retained Earnings to Total Assets (RETA) = Retained Earnings/Total Assets

Note: All data are obtained from the COMPU-STAT tapes. Detailed descriptions of the items can be found in the COMPUSTAT manuals.

The above financial ratios comprise the set of independent variables for the model. They are selected on the basis of the relationship between the ratios and going concern continuity as presented by Koh (1987). Basically, Koh (1987) derived the above ratios from the financial crisis model put forward by Hudson (1986) by modifying it to incorporate liquidity crisis, profitability crisis and net worth crisis. Analysis of the liquidity crisis resulted in the use of QACL, MVTA, and TLTA (indicators of liquidity), while analysis of the profitability crisis resulted in the use of NITA and IEBT (indicators of profitability). Finally, analysis of the net worth crisis resulted in the use of RETA (indicator of net worth). (See Koh, 1987, for the derivation of the ratios.)

All missing data in the COMPUSTAT tapes are filled in by using secondary data sources such as the *Moody's Industrial and OTC Manuals* and *10-K Reports*. The final data set has no missing data. This avoids any bias induced by non-randomly distributed missing data.

Construction of the Model

Based on the sample data, the WESML procedure is used to estimate the model parameters for the bankruptcy prediction model. Given the rate of bankruptcy among COMPUSTAT companies during the period 1979 to 1985, a 0.6% chance of bankruptcy is used in the WESML adjustment procedure. (That is, the 0.6% chance of bankruptcy is derived based on the total number of COMPUSTAT companies and the number of bankrupt COMPUSTAT companies during the

period 1979 to 1985). Results using probit analysis yield the following model:

$$Y = N(Z) \qquad (1)$$

$$Z = 9.8967 + 0.7979*QACL + 0.5569*MVTA$$
$$- 12.0050*TLTA - 0.0054*IEBT$$
$$+ 16.6764*NITA + 0.8644*RETA \qquad (2)$$

where

Y = conditional probability of non-bankruptcy

N(.) = cumulative normal probability function

Z = theoretical index or normal standard deviate

The above comprises the core of the bankruptcy prediction model. For any firm, the Z value can be computed by putting in the actual values of the variables in equation (2). The probability of non-bankruptcy can then be found by transforming the Z value into a probability estimate through the normal distribution table (this is what equation (1) means). The computation of Z is illustrated below using mean values of the variables for bankrupt and non-bankrupt firms (extracted from Table 2):

Bankrupt firms:

$$Z = 9.8967 + 0.7979*0.53 + 0.5569*0.77$$
$$- 12.0050*0.93 - 0.0054*(-1.81)$$
$$+ 16.6764*(-0.51) + 0.8644*(-1.04)$$
$$= -9.81$$

Non-bankrupt firms:

$$Z = 9.8967 + 0.7979*2.35 + 0.5569*1.33$$
$$- 12.0050*0.46 - 0.0054*0.16$$
$$+ 16.6764*0.06 + 0.8644*0.22$$
$$= 8.18$$

The overall significance level of the model is 0.0000 (to four decimal places) with a chi-square value of 452.71, indicating a very good fit.

Determination of the Optimal Cut-off Point

Probit analysis generates normal standard deviates (Z) but does not dictate what the cut-off point between the groups (i.e., bankrupt and non-bankrupt firms) should be. For the bankruptcy prediction model, the optimal cut-off point is determined as the point that minimises the expected misclassification costs of using the model. Generally, there are two possible types of misclassification errors in using the model. Type I error refers to the misclassification of a bankrupt firm as a non-bankrupt firm by the model and Type II error refers to the misclassification of a

Table 2
Descriptive Statistics of Sample Data

A. Bankrupt Firms

Variable	Mean	Standard Deviation	Range
QACL	0.53	0.40	0.00 to 2.48
MVTA	0.77	2.05	0.00 to 18.07
TLTA	0.93	0.30	0.46 to 2.18
IEBT	−1.81	37.91	−476.25 to 82.07
NITA	−0.51	2.41	−30.67 to 0.17
RETA	−1.04	6.86	−87.33 to 0.30

B. Non-Bankrupt Firms

Variable	Mean	Standard Deviation	Range
QACL	2.35	4.50	0.17 to 46.60
MVTA	1.33	3.36	0.00 to 37.09
TLTA	0.46	0.19	0.00 to 0.84
IEBT	0.16	0.73	−4.98 to 3.50
NITA	0.06	0.11	−0.76 to 0.44
RETA	0.22	0.33	−2.14 to 0.83

non-bankrupt firm as a bankrupt firm by the model. The expected misclassification costs of using the model can be expressed as follows:

$$EC = (PB)(PI)(CI) + (PN)(PII)(CII) \quad (3)$$

where

EC = expected misclassification costs of using the model

PB = prior probability of bankruptcy = 0.006

PN = prior probability of non-bankruptcy = 0.994

PI = conditional probability of Type I errors
= (number of Type I errors given a particular cut-off point)/(number of bankrupt firms)
= (number of Type I errors)/165, denoted NI/165

PII = conditional probability of Type II errors
= (number of Type II errors)/165, denoted NII/165

CI = misclassification cost of a Type I error

CII = misclassification cost of a Type II error

Generally, the misclassification costs of predicting the going concern status of audit clients incorrectly are not known because the expected consequences of incorrect audit opinions (e.g., loss of reputation, loss of existing and potential clients, and risk of lawsuits) are largely intangible and unmeasurable. For the present purpose, CI and CII are not measured. Instead, the expected misclassification costs of using the model are computed under alternative assumptions about the relative misclassification costs of Type I and Type II errors (i.e., the ratio CI to CII). In particular, the optimal cut-off normal standard deviates (denoted Z*) are computed for CI to CII ranging from 1: > 1 to 150:1. The results are summarised in Table 3. As can be seen, when the relative cost CI to CII is 1:1, the optimal cut-off point for the model is 1.7040. With this cut-off point, no non-bankrupt firms are incorrectly classified (i.e., zero Type II error) and 21 bankrupt firms are incorrectly classified as non-bankrupt firms (i.e., 21 Type I errors). This cut-off point minimises the cost of using the model.

It is interesting to note from the results that for CI to CII ranging from 1 to any value more than 1 (i.e., 1: > 1 or CI < CII), the optimal cut-off point is still 1.7040 and NI and NII are still 21 and 0, respectively. This is so because the higher the cost of Type II errors (relative to the cost of Type I errors), the more important it is to reduce the number of Type II errors (NII) in order to minimise the expected misclassification cost of using the model. However, since NII is already zero for

Table 3
Summary of Optimal Cut-off Points

CI to CII	Z*	NI	NII
1: > 1	1.7040	21	0
1:1	1.7040	21	0
10:1	1.7040	21	0
20:1	1.7040	21	0
30:1	1.7040	21	0
40:1	1.7040	21	0
50:1	1.7040	21	0
60:1	1.7040	21	0
70:1	1.7040	21	0
80:1	1.7040	21	0
90:1	1.7040	21	0
100:1	1.7040	21	0
106:1	1.7040	21	0
107:1	2.5397	10	7
110:1	2.5397	10	7
120:1	2.5397	10	7
130:1	2.5397	10	7
140:1	2.5397	10	7
150:1	2.5397	10	7

Key: CI to CII = relative costs of Type I and Type II errors. Z* = optimal cut-off point. NI = number of Type I errors. NII = number of Type II errors.
For example, when the relative cost CI to CII is 1:1, the optimal cut-off point for the model is 1.7040 (i.e., Z > 1.7040 implies going concern status and Z < 1.7040 implies non-going concern status). With this cut-off point, no non-bankrupt firms are incorrectly classified and 21 bankrupt firms are incorrectly classified as non-bankrupt firms. This cut-off point minimises the cost of using the model.

cut-off point 1.7070 when CI to CII is 1:1, NII cannot be reduced further. Thus, for all cases where CII is greater than CI (or 1: > 1), the optimal cut-off remains the same at 1.7040.

Finally, as can be seen from Table 3, the model is very insensitive to varying relative misclassification costs. In particular, for CI to CII ranging from 1: > 1 to 106:1, the optimal cut-off normal standard deviate (Z*) remains at 1.7040. In other words, it is only when the misclassification cost of a Type I error is more than 106 times that of a Type II error that a different Z* needs to be determined.

Accuracy Rates of the Model

Based on an optimal cut-off point of 1.7040, the in-sample accuracy rates of the model are 87.27% for bankrupt firms, 100.00% for non-bankrupt

Table 4
In-sample Classification Results

Actual Status	Number of Cases	Predicted States Bankrupt	Non-Bankrupt	Accuracy Rate
Bankrupt	165	144	21	87.27%
Non-Bankrupt	165	0	165	100.00%
Overall Accuracy Rate (Weighted)				99.92%

firms, and 99.92% overall. This corresponds to the misclassification of 21 bankrupt firms, no non-bankrupt firm, and 21 companies overall, respectively. The overall accuracy rate of the model is computed as a weighted average of the individual accuracy rates for non-bankrupt and bankrupt firms. The weights used are derived from the relative occurrence of non-bankrupt and bankrupt firms, which is 0.994 to 0.006. A weighted overall accuracy rate is used instead of a simple overall accuracy rate because the sample is matched and thus does not reflect real life proportions of bankrupt and non-bankrupt firms. Hence, a better assessment of the model can be obtained by incorporating the real life proportions of bankrupt and non-bankrupt firms (i.e., 0.006 and 0.994) in computing the overall accuracy rate. The weighted overall accuracy rate is a better estimate of what would occur in the real world if the model is applied. Table 4 presents the details.

With the above procedure for computing the overall accuracy rate, a classification rule that predicts *all* companies as going concerns has an overall accuracy rate of 99.40%. This reflects the real life situation experienced by auditors given that bankruptcy occurs only about 0.6% of the time. Given this observation, the 100.00% accuracy rate for predicting non-bankrupt firms is not surprising since it is more important to predict a very common occurrence (i.e., non-bankruptcy) correctly than to predict a very rare occurrence (i.e., bankruptcy) correctly. That is, given that non-bankruptcy is a very common occurrence compared to bankruptcy, a bankruptcy prediction model is expected to predict non-bankruptcy a lot more accurately (as compared to predicting bankruptcy—a rare event) in order to maximise

the overall accuracy of using the model. Otherwise, if the commonly occurring event (i.e., non-bankruptcy) is not accurately predicted, the model will have very low accuracy rates in real life applications. This, of course, ignores misclassification costs.

All the accuracy rates presented above are in-sample accuracy rates. In other words, the accuracy rates are computed on the basis of the estimation sample. Since the same 330 sample companies are also used to construct the bankruptcy prediction model, the in-sample accuracy rates are upward biased. Consequently, hold-out accuracy rates need to be computed before the predictive ability of the model can be assessed.

Since the Lachenbruch U method is the most efficient among all hold-out methods (Lachenbruch, 1967), it is used to compute the hold-out accuracy rates of the model. (There is a discussion of the Lachenbruch U method as a hold-out method under the literature review section.) The results are presented in Table 5. As can be seen, the hold-out accuracy rates of the bankruptcy prediction model are 85.45% for bankrupt firms, 100.00% for non-bankrupt firms, and 99.91% overall. This corresponds to the misclassification of 24 bankrupt firms, no non-bankrupt firm, and 24 companies overall, respectively.

Comparison of Accuracy Rates

Since the bankruptcy prediction model has the potential to aid auditors in making going concern assessments, it is appropriate to compare the accuracy rates of the model to those of the auditors. For this purpose, the auditors' accuracy rates are computed on the basis of their audit opinions for the 330 sample companies. For bankrupt firms, the

Table 5
Hold-out Classification Results

Actual Status	Number of Cases	Predicted States Bankrupt	Non-Bankrupt	Accuracy Rate
Bankrupt	165	141	24	85.45%
Non-Bankrupt	165	0	165	100.00%
Overall Accuracy Rate (Weighted)				99.91%

audit opinions contained in the last available financial statements preceding bankruptcy are used. For non-bankrupt firms, the audit opinions contained in the corresponding matched financial statements are used. An audit opinion is considered 'correct' if a going concern qualification is given to a non-going concern (operationalised as a bankrupt company) or if no going concern qualification is given to a going concern (operationalised as a non-bankrupt company). The audit opinions for the sample of 330 companies are obtained from the COMPUSTAT tapes, *Moody's Industrial and OTC Manuals*, and *10-K Reports*. A breakdown of the audit opinions by categories is given in Table 6.

It can be noted from Table 6 that 22 firms (3 non-bankrupt firms and 19 bankrupt firms) are qualified on bases other than a going concern basis. These qualifications refer to 'subject to' opinions issued by the auditors where the auditors give no direct or indirect hint of any going concern problems. Examples include outstanding lawsuits, valuation problems, and disagreements over accounting matters.

As can be seen from Table 6, the auditors' accuracy rates are 54.37% for bankrupt firms, 100.00% for non-bankrupt firms, and 99.73% overall. Thus, the model outperforms the auditors. In particular, while the auditors have an accuracy rate of 54.37% for bankrupt firms, the corresponding accuracy rate for the bankruptcy prediction model is 85.45%. It is interesting to note that both the model and auditors have 100.00% accuracy

rate for the classification of non-bankrupt firms as going concerns. Thus, the 'real' difference between the model and auditors is the accuracy rates for the classification of bankrupt firms or non-going concerns (i.e., 85.45% vs 54.37%). This is significant given the high costs of Type I errors (i.e., predicting bankrupt firms as non-bankrupt firms). However, even if the costs of Type II errors are higher than the costs of Type I errors, the model is still useful to the auditors because of the higher accuracy rate in the classification of bankrupt firms.

Usefulness and limitations of the model

Given the above results (in particular, the high accuracy rates and insensitive optimal cut-off point), the bankruptcy prediction model can be used to aid auditors in making going concern assessments. The model is both inexpensive and easy to use. Input to the model (i.e., QACL, MVTA, TLTA, IEBT, NITA and RETA) can be obtained readily from financial statements and classification can be made simply by calculating the standard normal deviate (Z) with the model coefficients (see equation (2)) and comparing it to the optimal cut-off point (see Table 3). Together with the results of other audit procedures, the auditors' observations, and discussions with management, the predicted going concern status can help the auditor form his opinion. Management is likely to accept the auditor's opinion more readily when the auditor's opinion is supported by an objective analysis.

Table 6
Breakdown of Audit Opinions

Audit Opinion	Non-Bankrupt Firms		Bankrupt Firms	
Unqualified	162	(98.18%)	54	(33.75%)
Qualified:				
Going Concern Basis	0	(0.00%)	87	(54.37%)
Other Bases*	3	(1.82%)	19	(11.88%)
Total	165	(100.00%)	160	(100.00%)
Accuracy Rate		100%		54.37%
Overall Accuracy Rate			99.73%	
No Opinion		0		5†
Total		165		165

Classification Accuracy Rates

	Bankrupt Firms	Non-Bankrupt Firms	Overall (Weighted)
Model	85.45%	100.00%	99.91%
Auditors	54.37%	100.00%	99.73%

*These 'other' qualifications refer to qualifications that do not have going concern implications.

†For these five firms, financial statements are available but no audit reports are available or included in the financial reports.

The model is also objective and unambiguous. It does not depend on subjective judgment; the probability of going concern continuity (non-bankruptcy) is determined statistically, and the prediction rule is clear. Thus, it overcomes some of the shortcomings of SAS No. 59 (i.e., too general and ambiguous).

Besides being a going concern prediction model to aid auditors in the formulation of audit opinions, the bankruptcy prediction model can be an important and persuasive analytical tool that auditors can use when discussing problems with clients. In particular, the prediction of going concern problems by the model can be taken as an early warning signal of impending problems the client may face. The auditor may bring this warning to the attention of the client and perhaps help the client isolate the causes of the problems and suggest possible solutions and actions. This, however, extends beyond the scope of a traditional financial audit.

The model can also be a defensive device in the case of litigation. Wallace (1983) reported that courts have not only accepted testimony which relies on statistical models but have also attributed substantial evidentiary force to such models and their implications.

In addition to using the bankruptcy prediction model at the end of an audit to determine the type of audit opinion that is appropriate, the auditor can also use the model at the beginning of an audit. By making an initial risk assessment of the financial position of an audit client with the model, the auditor can determine the scope of the audit and plan the necessary audit procedures.

Although the proposed model can be an effective prediction model, analytical tool and defensive device for the auditor, it is not without limitations. Most importantly, the model cannot and should not replace professional judgment—it only provides the auditor with further objective information for assessing the going concern status of companies. Ultimately, the auditor must form his own opinion.

Further, some potentially relevant items that are suggested by SAS No. 59 (such as management ability and future plans) are not formally incorporated into the model because of their non-availability and difficulty of measurement and quantification. Also, such items are not included in the probit model because SAS No. 59 was not in effect during the sample period (i.e., 1978–1985) when the auditors made judgments on the sample companies. This study focuses on financial ratios, which are readily available, easy to interpret, commonly used among managers, and intuitively linked with bankruptcy assessment. From the high accuracy rates obtained in this study, it appears that financial ratios are adequate for constructing bankruptcy prediction models. Nonetheless, in compliance with SAS No. 59 in practice, the potentially relevant items that it suggests should be examined by the auditor.

Finally, there is the need to update the model to incorporate new data and methodology when the need arises. With respect to methodology, it is worth noting that other statistical techniques besides probit analysis (e.g., discriminant analysis and logit analysis) have been used in the existing literature (see, for example, Koh and Killough, 1990). However, probit analysis is used in this study for the following reasons. First, discriminant analysis requires restrictive assumptions that are often violated. For example, discriminant analysis assumes that the independent variables are multivariate normal but, as reported by McLeay (1986), financial ratios are not even univariate normal. Further, discriminant analysis cannot generate valid probabilities of bankruptcy (Martin, 1977) and its coefficients are not unique (Eisenbeis, 1977). Second, probit analysis is selected instead of logit analysis because the derivation of the probit model fits very well into the going concern (or bankruptcy) prediction context. One very important assumption in probit analysis is that the theoretical index (in this case a measure of financial condition) is distributed normally (vs. logistically in logit analysis). Since the financial condition of a firm depends on many factors, it is reasonable to assume that the theoretical index is normally distributed via the central limit theorem; hence, probit analysis corresponds well to the characteristics of going concern prediction.

Despite the limitations highlighted above, the proposed model can be an effective aid for auditors.

Conclusion

This paper presents a bankruptcy prediction model as an effective prediction model, analytical tool and defensive device that auditors can use. Results indicate that the model outperforms auditors in making going concern assessments (in particular, the assessments of non-going concerns/bankrupt firms). Thus, the model can supplement existing external auditing guidelines on the assessment of going concern status and enhance the auditor's ability to make going concern assessments.

Despite significant advances made in the going concern/bankruptcy literature since Altman and McGough (1974), many areas still remain to be researched. In this concluding section some directions for future research are suggested.

First, the independent variables in the model comprise only six financial ratios. There are other factors that are suggested by SAS No. 59 that can affect the probability of going concern continuity (e.g., management ability and future plans). Such variables are not formally incorporated into the

model because of their non-availability and difficulty of measurement and quantification. Also, SAS No. 59 was not in effect during the sample period (i.e., 1978–1985) when the auditors made judgments on the sample companies. In view of this, one potential area for future research is to attempt to quantify the factors suggested by SAS No. 59 (or any other auditing standards and guidelines) and include them as variables in the construction of going concern prediction models.

Besides factors identified by auditing standards and guidelines such as SAS No. 59, cashflow variables, trend variables, stock market and industry variables (among others) can also be incorporated into bankruptcy prediction models. Thus, an important area for future research is to develop theoretical models of bankruptcy. Going concern/bankruptcy prediction models in general can be improved by selecting independent variables on the basis of improved theories of bankruptcy.

Second, it is useful to know the misclassification costs that are actually incurred by auditors in real life. This knowledge will shed light on the expected consequences of using going concern/bankruptcy prediction models and enable researchers better to determine the optimal cut-off points that minimise the expected misclassification costs of using the models.

Finally, it can be concluded that although a substantial amount of research has been done in the area of going concern/bankruptcy prediction in the past, much awaits to be done. It is hoped that the extensions and improvements suggested above can provide some directions for future research.

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Agency and the *Excessus* Balance in Manorial Accounts

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Abstract—This paper examines some accounting and legal aspects of the *excessus* balance in mediaeval manorial accounts. Earlier findings that such a balance may represent unpaid creditors are supported here with evidence from the Crowland Abbey estates, but it is also suggested that such a balance may possibly be explained as the outcome of an incentive arrangement in an agency relationship between the lord and the reeve. An attempt is made to apply the agency concepts of incentives, bonding and monitoring to this relationship. There is a discussion of whether manorial accounts and audit can be explained in terms of agency theory or whether the existence of the action of account implies a pre-existing legal obligation to account and submit to audit. The paper concludes with a consideration of the *excessus* balance in relation to the action of account.

The balance of a manorial account

A common occurrence at the bottom of the account rolls of thirteenth and fourteenth century manors was an *arreragia* (or *remanencia*) balance where the sum of the Charge exceeded that of the Discharge. It measured the indebtedness of the accounting official to his lord. Common though it was, the exact composition and precise meaning of the balance are nonetheless not always clear. It may have comprised cash in the hands of the accountant, debts due but not yet received by the accountant (e.g., for rent or commuted labour services), balances brought forward from previous accounts or accountants, or some combination of these (Denholm-Young, 1937, p. 127; Davies, 1968). It is not clear, either, whether any special significance can be attached to those forms of account following the Winchester model where the accounting official pays over the balance at or shortly after the audit or before the next account is heard, and is given his acquittance, or to those following the Westminster model where the *arreragia* are carried forward and entered into the following year's Charge (Oschinsky, 1971, p. 215; Noke, 1981, p. 143). Yet more puzzling, however, as Postles (1981, p. 105) has pointed out, is the *excessus* balance, where the sum of the Discharge exceeds that of the Charge, for this raises the question—as Postles puts it—'How can the outgoings be held to have exceeded the income? Surely it was impossible for the accounting official to have spent more than he received.'

Some of the best known treatises on estate management and accounting which were in circulation at the time do not appear to provide for this possibility. Walter of Henley, for example, considers only the *arreragia* balance when he instructs:

> And if any arrerages happen upon the finall accompt let it be quickelye levyed. And if thaccomptant name any parson which oweth that arrerage then take youe the name of that man, for often tymes it chaunceth that the servauntes and reeves be the debtors theimselves and yet do make other men the debtors which neyther can nor ought to paye it. And this they doe to cover theire unfaythfulnesse withall. (c. 110, in Oschinsky, 1971, p. 341)

The author of the anonymous *Husbandry* also begins his section on the account with the stipulation:

> One owes first for the arrears, if there are any. (c. 37, in Oschinsky, 1971, p. 432)

with no corresponding instruction regarding an *excessus* carried forward. And while the account rolls of the Exchequer occasionally show that the sheriff '*habet de superplus*' the *Dialogus de Scaccario* gives no indication as to what should take place when this occurred (Johnson, 1950, p.xlvi).

However, rule 4 of the *Regule Compoti* of the Account Book of Beaulieu Abbey (believed by Hockey to date from 1269–70) (Hockey, 1975) recognises the possibility of the *excessus* when it explains how it arises and how it should be treated in subsequent accounts:

> *Excessus est quando aliquis plus expendit quam receperit, et illum excessum in compoto suo tunc proximo futuro solvit in principio expensarum suarum antequam expensas faciat aut libera-*

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cionem. Et vocatur supplusagium tunc in proximo compoto, sic. In supplusagio extremi compoti, tantum et c.[1] (in Hockey, 1975, p. 48)

And such possibility is provided for also by the mid-thirteenth century treatise on accounting in MS. 7 (BM, Harleian MS. 1005, ff. 93ʳ·ᵛ, in Oschinsky, 1971, p. 459) when it ends the *ordo compoti* in part ii with the sentence:

Finito compotus tantum debet unus vel alter alteri.[2]

Although the Beaulieu Abbey rules may suggest that the *excessus* is indeed no more than the excess of the amount spent over the amount received, neither those rules, nor MS 7, give any guidance as to how the accountant managed to spend more than he received (if, indeed, he did). The Beaulieu Abbey accounts too are simply illustrative of rule 4, that for Soberton, for example, beginning the *expensa necessaria* with '*in supplusagio extremi compoti x.li.xv.s.vj.d*' and ending the account with the simple statement '*et excedit xxj.li.xv.s.iij.d.q.*' (Hockey, 1975, pp. 115–116)

Postles, however, provides an answer in part to his questions in his study of the accounts of the glebe demesnes of Oseney Abbey, where he shows that the *excessus* there represented items in the Discharge which had not actually been paid, i.e. it represented the indebtedness of the reeve to certain creditors. He illustrates this (p. 106) with evidence from the Chastleton account of 1338–9 and the Waterperry accounts of 1339 and 1340, e.g.:

... et sic excedit iiij.li. ob. qu. Nomina debiti videlicet vicario loci xxiij.s.x.d ..... Item pro stipendiis famulorum per totum annum xj.s.viij. d ....[3]

Some support for Postles' contention may be found in the accounts of the manors of Crowland Abbey which provide further examples of the *excessus* balance dating from rather earlier than

the examples from Oseney Abbey. However, these accounts also suggest other factors affecting the closing balance which may explain the apparent ability of the accountant to spend more than he received.

The *excessus* balance at Crowland Abbey

The account roll of all the Crowland manors for the year 1258–59 contains 11 examples of an *excessus* balance.[4] In each case the money accounts end with variants of the paragraph:

Omnibus ergo computatis subtractis et allocatis dominus debet preposito viij.s x.d.q. Et idem prepositus debet omnia in rotulo compoti contenta adquietare et in stipendiis seruientum prout in rotulo continento scilicet usque ad hanc diem compoti.[5] (Wellingborough, 1258–9)

suggesting that on these manors, as in the Oseney Abbey accounts, it was common to account in both the Charge and the Discharge on the accrual basis rather than when payment was received or made. It should, however, be noted that similar wording appears also in the accounts of those manors showing the more familiar *arreragia* balance, suggesting that even in those cases the amount shown as owing to the lord was not necessarily a measure of the cash in the hands of the reeve; he may well have been holding money pending payment to creditors. Few of the Crowland accounts give more detail of the composition of the closing balances, though the account roll for the reeves of Wellingborough in 1304–5 is—like the Oseney account rolls—more specific when it notes:

Summa totius expensarum et liberationum xx.li ij.d. ob. q. et sic expense excedunt Receptas in iiij. li. v.sol. j.d. q. quorum lvj. sol. debentur pro stipendiis famulorum.[6]

Thus far the Crowland accounts seem merely to reinforce the findings of Postles. Evidence may also be found elsewhere to support the suggestion that the *excessus* balance includes amounts owing to third parties. For example, in the action of Bogo de Clare against Walter de Reygni in the Exchequer of Pleas in 1286—albeit this was a case involving the keeper of his wardrobe rather than a manorial reeve—an *excessus* of £375 3s 0d was found owing to Walter; in evidence, Walter stated

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[1] 'The *excessus* arises when someone spends more than he receives, and he satisfies that *excessus* in his next account as the first item of his expenses before he deals with the expenses or the liveries. And it is called "*supplusagium*" in the next account, i.e. "*supplusagium*" from the previous account, so much etc.'

However, the word '*solvit*' in this rule may be ambiguous. *Solvere* may mean to pay or to free oneself from debt (and is often used as such at the foot of manorial accounts, as in, for example, '*solvit post compotum et quietus est.*') If this rule were translated as 'he pays that *excessus* in his next account' that might be consistent with the findings of Postles (1981), and practice on the Crowland Abbey estates, referred to in the text. Although *Freund's Latin Dictionary* shows *expendere* and *solvere* as synonyms, the use of the two words in this rule could therefore well be significant.

[2] 'At the end of the account, so much is owed by one or the other to the other.'

[3] 'And so there is an *excessus* of £4 0s 0¾d. The names of the creditors, that is to say the vicar of the place 23s 10d ... the wages of the farm labourers for the whole year 11s 8d....'

[4] Oakington, Dowdike, Whaplode, Aswick Grange, Wellingborough, Addington, Elmington, Morborne, Langtoft, Bowthorpe and Bucknall.

[5] 'Therefore all things being added, subtracted and allowed for the lord owes the reeve 8s 10¼d. And the said reeve must settle everything contained in this roll, and the wages of the servants as contained in this roll, up to the day of this account.'

[6] 'Total expenses and liveries £20 0s 2¼d and so the expenses exceed the receipts by £4 5s 1¼d of which 56s is owed for the wages of the farm labourers.'

that the amount was 'owed to diverse creditors and a certain part to himself' (*Select Cases in the Exchequer of Pleas*, p. 116). However, the particular interest of the Crowland accounts lies in the way that the *excessus* balance was very common in these accounts for much of the latter part of the thirteenth century, but—on the basis of the admittedly very restricted evidence available—seems to have become less common shortly after the turn of the century. As well as in the 1258–59 rolls referred to above, in the Wellingborough account rolls as edited by Page (1936) an *excessus* balance appears in 1267–68, and although it does not appear in 1271–72 or 1276–77 it otherwise appears 20 times in the reeve's accounts (and several times in the Collector's accounts) in the account rolls available for the period 1280–1313. It does not, however, appear in the rolls for 1314–15 or 1322–23. Of the fewer accounts available for the other manors, as edited by Page (1934), an *excessus* appears in the rolls of Oakington, Drayton and Cottenham in 1267–68, Oakington 1292–93, and Cottenham 1314–15, but not in those of Drayton or Oakington 1314–15, nor for any of the three Cambridgeshire manors in 1322–23. Surprisingly, given this trend, the balance reappears on the Oakington reeve's account roll 1361–2 where a change in the terminology of the *excessus* is evident; in that account the phrase *Et sic superexpense c.i.s.xj.d* has replaced the more usual form and a separate heading *superexpense* has appeared in the account roll as the first item amongst the expenses:

Idem computat in superexpensis ultimi compoti anni precedentis ix.li. vij.s.[7]

There is, however, no obvious significance in this change in terminology which may be found elsewhere, particularly in Scottish accounts such as that for the Earl of Mar, Chamberlain of Scotland, as early as 1264 (*Exchequer Rolls of Scotland*, p. 11).

The *excessus* and sales at the audit

What can explain the apparent change in the frequency with which the *excessus* balance occurs? It appears to coincide with the formal introduction into the accounts of 'sales at the audit', the '*venditio super compotum*'. As is well known, following Drew's description of accounting and audit at St Swithun's Priory, Winchester (Drew, 1947), these often represented shortfalls in the corn and stock accounts, or other deficiencies, which the accountant was charged with by the auditors when the account was heard, and which were commuted into

money and entered in the Charge. In the Wellingborough accounts these seem first to appear on the roll for 1312–13, when amongst the receipts Ricardus Palere is charged with:

De iiij quarteriis iij.b. brasei ordei venditis super compotum xxj.sol. iiij.d.ob. Item de xix aucis venditis super compotum iij.sol. xj.d.ob. Item de $\overset{xx}{iiij}$ columbella venditis super compotum xx.d.[8]

On this particular account there was an *arreragia* balance, representing an excess of receipts over expenses of fifteen shillings six pence. It is obvious that the sales at the audit considerably exceed this sum and that had the reeve not been charged with them there would in fact have been an *excessus* balance, as in earlier years. The sums involved at Wellingborough the following year were considerably in excess of this; there was an excess of receipts over payments of 74 shillings but sales at the audit were more than twice this amount, so that again, but for the sales at the audit, there would have been an *excessus* balance.

The other manors of Oakington and Drayton in 1314–15 also include sales at the audit amongst the Charge, albeit in those cases not of sufficient amount materially to affect the excess of receipts over payments. Interestingly, however, Cottenham's account roll for that year does not include any such sales and as noted earlier it is the only one of the three manors still to show an *excessus* balance. In the 1322–23 roll of Oakington, sales at the audit amount to £9 12s 1d, compared with an *arreragia* balance, before allowances, of £8 17s 3d.

The impact of accounting for 'sales at the audit' on reducing the *excessus* balance, often turning it into an *arreragia* balance, does not of course affect the actual nature of the *excessus* in cases where it existed. It does, however, suggest that one should be careful in drawing too definite a distinction between different types of balance or in imparting too great a significance to any particular type of balance. An *excessus* might still be represented by specific amounts owing to sundry creditors just as an *arreragia* balance might still be struck after providing for amounts payable but not yet paid. In some cases, however, we might at least surmise that the *excessus* did indeed represent a genuine excess of payments made over money received—a situation that was in part present in the Bogo de Clare case, noted above—for on the Crowland Abbey estates, although carry forward to the next account was often the method of treating an *excessus* balance, in at least two cases the excess seems to have been paid to the reeve at the time of the

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[7] 'The same accounts for £9 7s 0d *superexpense* from the last account of the preceding year.'

[8] 'For 4 quarters 3 bushels of malt barley sold at the audit 21s 4½d. For 9 geese sold at the audit 3s 11½d. For 80 pigeons sold at the audit 20d.'

account. The Wellingborough account for 1280–81 notes:

> *Et sic excedunt expense receptas in xxix.sol.vj.d. quos recepit super compotum per manus fratris Thomas de Well*[9]

while the Drayton account for 1267–8 concludes:

> *.. et sic excedunt expense receptum xxxj.s. viij.d. et idem prepositus debet omnia adquietare in hoc rotulo contenta usque ad diem compoti. Memorandum quod dominus soluit dicto preposito omnia arreragia in isto compoto et omnibus aliis precedentibus ita quod quietus est.*[10]

Despite the usual injunction here to settle everything contained in the roll, it is at least conceivable that the reason for the *excessus* being paid to the reeve in these cases was that the reeve had in fact financed the manor from his own resources—or from the 'secret reserves' of the manor, not unlike the way in which Chaucer's reeve used to lend his lord the lord's money. And the 'sales at the audit'—or rather, the fewer such penalties in earlier accounts—might help explain how he did so.

As noted above, sales at the audit often reflected the monetary value of differences between the accountant's claims of yields from corn and livestock and the yields that the auditors expected, based upon standards laid down in treatises on estate management and accounting and, no doubt, their experience. Even after these checks and penalties were introduced as part of the audit, it is likely that the auditors were happy with charging the accountant with the standard yield. As the anonymous author of *Husbandry* recognised:

> Now, if the land yields more than the accountant was charged by the method 'by the grain' the lord will lose, if it yields less the accountant will be out of pocket. But although this method of charging corn offers no certainty many people apply it. (c.4, in Oschinsky, 1971, p. 419)

And we may suspect that often the lord did lose. Drew, for example, points out that at St Swithuns from the 1320s onwards, every manor was showing in its accounts a yield of 60 piglets, 28 goslings, 60 chickens and 300 eggs, and that since most of the manors could support more breeding stock than this 'a capable, enterprising man could make money in this direction' (Drew 1947, p. 28). This would be consistent with the 'explicit and illuminating instruction for "cooking accounts"'

(Denholm-Young, 1946, p. 100) in Robert Carpenter's treatise (in Oschinsky, 1971, p. 461) when he suggests—amongst other things—that '*ad bene reddendum compotum*'[11] the reeve might, for example, understate the number of lambs born. In short, the enterprising reeve could pay more than he received by using money accumulated from apparently defrauding the lord.[12]

This raises the question why the auditors—presumably with the lord's blessing—appear often to have been content with the meeting of standard yields, given that it would naturally be in the lord's interest to maximise the yield of his demesnes and to minimise fraud. It may be that the tools of agency theory as a branch of positive accounting theory can help explain this.

Agency relationships on the manor

Jensen and Meckling (1976, p. 308) have pointed out that an agency relationship is based on a contract, as part of which:

> The principal can limit divergences from his interest by establishing appropriate incentives for the agent and by incurring monitoring costs designed to limit the aberrant activities of the agent. In addition in some situations it will pay the agent to expend resources (bonding costs) to guarantee that he will not take certain actions which would harm the principal or to ensure that the principal will be compensated if he does take such actions.

The relationship between the lord and the reeve on the manor may be classified as one of principal and agent. The reeve's day to day powers were considerable and, as Bennett (1937, p. 168) puts it, 'the claims of the reeve to be considered as the "pivot man" of the manorial administrative system are very great'. However, he did not have a totally free hand in decision-making, and in particular was restricted in the expenses he could incur on behalf of the lord; for example, if the treatises are to be taken at face value, he ought not to sell corn or stock without authority from the lord (*Seneschaucy* c.41, in Oschinsky, 1971, p. 279). From the reeve's point of view, these limitations on his decision making power may be thought of as examples of the bonding costs cited by Jensen and Meckling (1976, p. 325), since they would appear to limit the scope for taking advantage of favourable opportunities as they arose. However, it is one thing to posit a principal:agent relationship; it is quite another to suggest that this was founded in any way on contract or agreement.

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[9] 'And so the expenses exceed the receipts by 29s 6d which he receives at the account from the hand of brother Thomas de Well.'

[10] 'And so the expenses exceed the receipts by 31s 8d and the said reeve must settle everything contained in this account up to the date of the account. Note that the lord paid the reeve all the arrears in this account and in all the other earlier ones and is quit.'

[11] 'For the better rendering of the account.'

[12] Denholm-Young (1946, p. 100) noted about Carpenter, 'there can be little doubt that [he] was an astute and dishonest fellow who did not scruple to cheat his master. No doubt many others were like him . . .'.

The reeve was a villein tenant and, according to Plucknett (1954, p. 7), in many cases his office became compulsory. Bennett (1937, p. 169) points out that the system for appointment of the reeve varied enormously from one estate to another. In some places it depended purely on autocratic selection by the lord, and in such cases the idea of a consensual relationship seems hard to accept. In other cases, however, selection of the reeve might be by preliminary selection by the peasants, with final selection by the lord, or by democratic election by the peasants. The idea of agreeing to act seems more credible in these circumstances, particularly once allowance is made for the possibility of paying a fine to avoid having to serve as reeve, a practice that became fairly common[13] (*Select Pleas in Manorial Courts*, pp. 23, 45, 168; Bennett, 1937, p. 171, Drew, 1947, p. 27). If one could avoid service by paying a fine, willingness to serve seems more consensual and may be regarded as compatible with the requirement that a contract for service must be sufficiently attractive to prevent the agent offering his services elsewhere—or in this case not offering his service at all. Combined with the swearing in by the lord or his steward in the presence of the court (Bennett, 1937, p. 172), during which the reeve no doubt took an oath to carry out his duties honestly and to account to the lord for his doings, the idea of at least a quasi-contractual relationship seems less absurd. Indeed, Chaucer—a perceptive observer of these matters—notes in his General Prologue that the reeve:

> ... by his covenant yaf the rekenynge
> Syn that his lord was twenty yeer of age.

The term 'covenant' may be taken as corresponding to 'contract' nowadays. (It is worth observing that Chaucer's reeve appears to have served his lord for many years in a relationship that was presumably found satisfactory to both parties.)

In keeping with the assumptions of agency theory, there are clearly reasons to believe that the reeve would not always act in the best interests of his master. The treatises were well aware of the incentive to cheat. Quite apart from Robert Carpenter's text on creative accounting, Walter of Henley warns:

> Suche as have other mens things in theire custodie ought by good reason to knowe theise fowre things: to love theire maister and to feare

him; and in making of profite they ought to thynke that the thing is theire owne but in making expence they should thynke it an other mans. But fewe servauntes or reeves bee theare which have alle theise iiii things together. Yea, many theare bee which have loste the first three and doe reteyne the fourthe but yet have turned it out of his right course. And knowing that the thing is an other mans and not theire owne they take it with the right hand and the lefte as they may best extort it and theire unfaithfulnes not be perceaved. (c. 111, 112 in Oschinsky, 1971, p. 341)

And Walter gives a specific warning that:

> it cometh often to passe that those which buy and selle doe in their accompt increase the things boughte and dyminishe the things solde. If you bee to selle or buy [by weight] bee well advised for theare is muche fraude to suche as cannot espie it. (c. 108, in Oschinsky, 1971, p. 341)

Indeed, the scope for personal enrichment is well illustrated by the accusations levelled against Michael Reeve on the Elton (Hunts.) Manor of the Abbey of Ramsey in 1278 (*Select Pleas in Manorial Courts*, p. 95), when he complained that his defamers had accused him of:

> collecting his own hay by means of the labour services due to the Abbot, and with reaping his own crop in autumn by means of boon works done by the abbot's customers, and with ploughing his own land in Eversholmfield by means of ploughs booned from the vill and with releasing the customers from their labours and carrying service on condition of their letting and handing over their land to him at a cheap rate, and of taking gifts from the richer tenants as a consideration for not turning them into tenants at money rents and with obliging the poorer tenants to become payers of money rent.

He received damages from his defamers for their 'vile words'.

The management problem facing the lord, therefore, was deciding on what terms to deal with the reeve to ensure that the reeve acted in the interest of the lord. Agency theory suggests that the principal will try to devise an incentive scheme to get the agent to act in the principal's interest while the agent may incur bonding costs as evidence of his good faith.

Incentives and bonding

As far as bonding costs go, the reeve might be said to have incurred such costs in a number of ways. Firstly, he was personally liable for errors, omissions and sins of commission and was therefore effectively pledging his all against his good behaviour and wise administration. Secondly,

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[13] For example, in the pleas of the manor of the abbey of Bec in 1275 it is noted that 'William Ketelburn gives the lord 6s 8d that he may be removed from the office of reeve', and in 1296 'John Robin offered lord a mark of silver for leave to retire from the office of reeve'. (*Select Pleas in Manorial Courts*, pp. 23, 45). In the cases noted by Drew (1947, p. 27) the fines appear to be rather larger, e.g. 40s in Portland in 1311, 20s in Michelmersh in 1325; this may be why, according to Drew, few villeins at St Swithuns chose to pay the fine.

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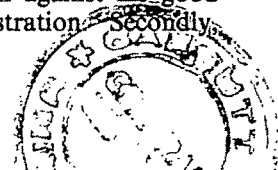
these pledges may often have extended beyond the possessions of the reeve himself, for *Husbandry* is specific that:

> All those on the manor who hold in villenage of the lord ought to elect as reeve some one for whom they are willing to be responsible, because if the lord suffers any loss through the fault of the reeve and if the reeve has no property of his own to repay the loss, they will have to pay for anything which he cannot pay from his own pocket. (c.55 in Oschinsky, p. 441)

Plucknett (1954, p. 7) further points out that in some places where the reeve was elected by the villeins 'villeins were ready to buy this privilege although it carried with it the corollary that they became liable to guarantee the reeve's account'. This could be taken as an example of 'explicit bonding against malfeasance on the part of the manager' (Jensen and Meckling, 1976, p. 325) (though it is certainly different from the more obvious examples of 'bonding' by mediaeval guild masters and wardens, cited in Watts and Zimmerman, 1983, p. 618, who by the fifteenth century at least were apparently often required to post bonds, the balance of which would be returned on their retirement). Although the residual claimant to the benefits of the manor was the lord, it would also seem to follow from this doctrine of strict liability that the residual loss—at least to the extent that it was thought to be within his control—was borne by the reeve, perhaps a rather unusual bearing of risk in a principal:agent relationship.[14] Indeed, it may be presumed that, on those manors where it was possible to pay a fine to avoid service as reeve, it was the risk-averse reeve who did so, to avoid just these sorts of risk. Those who chose to serve—and often to serve for more than one term—must presumably have thought the rewards sufficient to compensate for the risks assumed.

As far as rewarding the agent goes, in a situation where the principal can observe the effort expended by the agent, or can deduce the effort from *ex post* knowledge of the state of the world, agency theory suggests that an incentive contract would pay the agent a fixed sum if he takes proper action and impose a penalty if he shirks his responsibility. When the principal cannot observe the agent's efforts, it is likely to be optimal to have the agent share in the outcome of his efforts so as to provide the incentive (Watts and Zimmerman, 1986, p. 185). The typical arrangement with the reeve may be considered in this light.

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[14] In the analysis of residual claims by Fama and Jensen (1983, p. 328) it is envisaged that 'the contract structures of organisations limit the risks undertaken by most agents by specifying either fixed payoffs or incentive payoffs tied to specific measures of performance. The residual risk is borne by those who contract for the rights to net cash flows.'

Naturally, the precise terms of service differed from one manor to another. Drew (1947, p. 38) has shown that on the typical manor of St Swithun's Priory the reeve received no direct wage as such. However, his rent was remitted, as were his customary works, and he usually received a lamb and a fleece and sometimes a piglet and cheese. Moreover he was entitled to feed at the lord's expense during the harvest period. Together these might have amounted to some 24s per annum. Bennett (1937, pp. 158, 176) has suggested that the reeve was often given a small money payment (five shillings at Berkhamsted in 1300), but that the bulk of his remuneration came from remission of rent, the temporary grant of special pieces of meadow or close, and the relaxation of many services. In the Crowland accounts the most common allowance appears to be allowance of rent; for example, the account roll for Oakington regularly contains an allowance, amongst the Discharge, of four shillings for the reeve's rent remitted.

The formal remuneration of the reeve would thus appear to consist of a largely fixed package. Moreover, as part of this arrangement, even before sales at the audit were formally instituted, the auditors would impose occasional penalties on the reeve for underachievement (e.g. in prices obtained or quantities produced); this would be evidenced by striking items through on the face of the accounts and substituting larger amounts (Drew, 1947, p. 17; Harvey, 1976, p. 52). The arrangement would therefore seem to be compatible with the situation where the principal can observe or deduce effort by the agent. However, it is obvious from the size of some of the penalties imposed on him—as from the size of the more formal 'sales at the audit'—that the reeve could not possibly pay them from the meagre fixed remuneration he was given. For example, Drew (1947, p. 20) has shown that in 1267 the reeve of Stockton suffered penalties totalling £8 3s 8d, while it was noted above that at Oakington in 1322–23 sales at the audit amounted to £9 12s 1d. Hoskins and Macve (1986, p. 115) conclude from this that the auditors' control of the reeve was more apparent than real. But a different explanation, still compatible with an agency-theoretic approach, is possible. This is that, provided some predetermined yields were achieved, the lord was prepared to permit the reeve at least to share in—if not take the whole of—any excess, as his incentive for good performance. In other words, he was effectively adopting an outcome-related contract, or more specifically a budget-based contract which, at its most generous and most severe, would be of the form $Y_A = a + (X - b)$ where Y_A = the reeve's income, a = a fixed sum, X = outcome and b = a predetermined yield. Thus, the enterprising reeve was not so much defrauding his lord as benefiting from the results of his good administration, and contributing to an increase in the

utility of both of them. This in turn—in answer to Postles' question posed earlier—would allow the successful reeve ample funds to spend more than he received.[15] What is more, this approach would appear to be consistent with the treatment of the Sheriffs in the Royal Exchequer, who—in the twelfth century at least—were charged with the fixed 'farm' part of their receipts without enquiry being made as to how much they had actually been able to raise from the royal manors (Poole, 1912, p. 129). The difference would represent their incentive to collect the King's revenues.

However, it was noted above that on the Crowland Abbey estates the incidence of the *excessus* balance diminished as that of 'sales at the audit' increased and we may surmise from this that it coincided with a reduction in the overall financial package that the reeve was able to enjoy. This seems to have occurred also at St Swithuns, for Drew (1947, p.21) notes that in the late thirteenth century penalties in the accounts were comparatively rare and 'in the days to come, reeves and serjeants looked back on this 1270–1315 period as a sort of "golden age"'. That raises the question why auditors and lords tightened up during the early fourteenth century. It may simply have been that with greater experience, and the greater spread of treatises on estate management, knowledge of what could be achieved as 'standard' became more widespread and it became easier to ensure an increase in the lord's utility whilst still providing sufficient—if reduced—incentive for the reeve. This would then represent a further change in a single course of development stretching from the early thirteenth to the mid-fourteenth century whereby the lord's control of the reeve became less and less direct and correspondingly less expensive; firstly a hierarchy of supervisors had been replaced by a system of written accounts and audit, then the reeve was effectively made part-lessee by the requirement for predetermined returns.

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[15] There are obvious problems in ascertaining the effort expended by an agent in an agricultural situation. For example, although it might be thought that *ex post* knowledge of the actual state of the world such as weather conditions would help in ascertaining effort and honesty yet, 'although many manorial accounts contain references to weather conditions, correlations between patterns of weather and crop yields are poor' (Pretty, 1990, p. 12. See also Titow, 1960.) An outcome-related contract would overcome many of these problems.

[16] 'For the visit of master John the rector . . . and Richard of Glatton to make a view of the account on the Monday of . . . the Evangelist and for their lodging on the following Tuesday and Wednesday. For bread 2s 2d. For ale 15½d. For beef 8d. For pork 7d. For veal 3d. For herrings and fish 3d. For larks 2¼d. For eggs 1½d. For mustard, pepper, saffron . . . 1½d. For the expenses of Robert the clerk on the Saturday of the eve of St Luke the Evangelist until the Monday of Richard of Glatton's arrival, for two days and for his lodging after the departure of Richard of Glatton on the Thursday following until the Tuesday, for five days for the account. . . . For bread 4d. For ale 7d. For meat 6d. For herrings and fish 4d. For eggs 1½d. For two pounds of candles 4d.'

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Monitoring costs

Agency theory not only seeks to explain the design of incentive contracts; it suggests also that the principal or agent will incur monitoring costs to see that the contract is kept to. And it is therefore entirely consistent with the theory that the lord should incur monitoring costs by way of the annual audit of the reeve's account by the lord's auditors (and sometimes by the view of account during the course of the year). Examples of the costs of the audit—which largely took the form of subsistence rather than any direct payment (though payment would occasionally be made to the scribe for preparing the roll)—are often found on the accounts themselves. For example, the account of Wellingborough in 1322 includes the following amongst the Discharge:

In aduentu magistri Johannis rectoris . . . et Ricardi de Glatton ad visum compoti faciendum die Lune in . . . Evangeliste et in moram eorum die martis sequente et die mercurie. In pane ij. sol.ij.d. In ceruisia xv.d.ob. In carne bouina viij.d. In carne porcula vij.d. In carne iuuenculia iij.d. In alettis et pisce iij.d. In alaudis ij.d.q. In ouis j.d.ob. In allea pipere croco et . . . j.d.ob. Item in expensis Roberti clerici a die Sabbatici in vigilia sancti Luce Ewangeliste usque diem Lune in aduentu Ricardi de Glatton per duos dies et in moram suam post recessum Ricardi de Glatton a die Jouis sequente usque diem martis per quinque dies pro compoto . . . In pane iiij.d. In ceruisia vij.d. In carne vj.d. In allecis et pisce iiij.d. In ouis j.d.ob. In ij libris candele iiij.d.[16]

The counter roll for Bosham in Sussex (cited in Denholm-Young 1937, p. 133) is more concise when it notes:

In expensis computatorum pro compoto audiendo per talliam xlj.s. i.d. et quad.[17]

On the reeve's part, too, it would be entirely consistent with the reasoning of agency theory that he should agree to render the annual *compotus*.

The tenets of agency theory are often used to illustrate the voluntary undertaking of accounting and audit even in the absence of any legal regulation; the place of the law is seen as enforcing the contract at the heart of the theory. While agency theory might be consistent with the accounting and monitoring activities of mediaeval manors, the question as to whether those activities can be explained solely by the theory is at least debatable. Certainly as far as the reeve is concerned the distinction between a 'legal' requirement to account and a voluntary one might be thought a very

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[17] 'For the expenses of the accountants to audit the account 41s 1¼d by tally.' Denholm-Young points out, however, that this is a drastic compression of the detail in the view.

fine one, depending on how one interprets 'legal'. As a villein tenant the reeve 'had his problems settled for him summarily in his lord's domestic or manorial jurisdiction' (Plucknett, 1954, p. 31) and a reeve who failed to render his account would no doubt soon find himself amerced by his lord. Whether such amercement should be regarded as the use of 'law' to enforce an agreement, or whether it might be thought to represent an implicit legal requirement to account, is debatable. However, in some cases the accounting official was not the reeve at all, but rather a freeman, usually a bailiff. And of him Denholm-Young (1947, p. 154) notes:

> the bailiff was more elusive than the reeve. He took oaths of fealty, found pledges, and so forth, but apparently seignorial justice was insufficient to deal with him. The aid of the exchequer had to be invoked. To deal with malfeasing officials an action of account arose....

Agency and the action of account

In looking at agency and mediaeval auditing, Mills (1990) discusses the action of account. Following Langdell (1889) she stresses however that:

> the obligation to render account was not based on contract. The requirement was non-contractual in nature and was considered to exist independently of any agreement between agent and principal. (p. 62)

This view is supported by Plucknett when he points out that, far from being based on contract, by the fourteenth century it had been made clear that one could not even contract to make oneself subject to the action of account (Plucknett, 1956, p. 635). Either the relationship giving rise to the action existed or it did not. Mills concludes that if the purpose of historically based studies 'is to argue that audits would exist without any legal intervention beyond enforcement of contract, the pre-modern evidence is at present insufficient to substantiate this claim' (1990, p. 62).

However, in considering agency theory and an unregulated environment, it is necessary to try to look at the situation before the action of account was invented. Before then, even if the duty to account could be said to have existed, there appears to have been no way it could be enforced in the courts. And without a remedy there was no right (and hence no obligation). At most there may have been a moral obligation to account. Prior to the action of account, all that existed was the action of debt, which applied only to liquidated sums, or covenant, which was limited to actions on agreements which were evidenced by sealed writings (Belsheim, 1932, p. 469). In such an essentially

unregulated environment, it could be argued that the account—when rendered—was rendered voluntarily, as a result of the relationship entered into between the lord and the accountant.

The problem, however, is in trying to identify just when the action arose, and how this related to the prior existence of manorial accounting. According to Fifoot (1949, p. 268) the action appears first to have been recorded *circa* 1200 when:

> the bailiff to the Archbishop of Canterbury was brought into the Curia Regis to explain why he had failed to render an account of chattels committed to his charge.... By 1232 the pleadings in such actions seem to have been crystallised although no writ of account appeared upon the Register until the middle of the century.

On the other hand, according to Hall (1903, p. xii), reference to a bailiff's *compotus* occurs as early as 1170, clearly predating the first recorded action. Moreover, there are reasons for believing that oral accounting and audit was a common occurrence on manorial estates long before the development of written accounts (Harvey, 1976, pp. 15, 31; Noke, 1981, p. 138). If the appearance of the writ on the register is taken as formal recognition of the action, there would seem to be some 50 or so critical years during which written manorial accounting and audit developed outside the common law, and a rather longer period since oral accounting had developed.

However, Van Caenegem (1959, p. 345) has identified 'a solitary precursor of the writ' from *circa* 1163. This writ required Emelina de Ros to account for expenses and profits to the Abbot of St Augustines, Canterbury, 'as she and her ancestors in Henry I's time had done'. Van Caenegem notes about the writ that 'it seems that an executive measure, outside the courts, and to the benefit of individuals, is at the origin of what was later to become a distinct plea in the royal courts'. The question is whether such a writ, founded as it seems on custom in a particular case, might be thought to represent a general legal concept of accountability, or merely one peculiar to the facts. Certainly Stoljar (1964, p. 204) argues that the action of account proper 'did not begin as the expression of a general principle, such as a principle of accountability, of application to all manner of agents and fiduciaries. The action began rather as a specific remedy for an exceptional case' (the exceptional case being 'a special class of accountants: manorial bailiffs failing to account for money received and collected ...').

The problem of trying to establish which came first—accounting or the obligation to account—is complicated by the thirteenth century (and earlier) system of justice. As Plucknett (1954, p. 23) notes, 'In the thirteenth century the bulk of the nation's

litigation did not take place in the king's court but in the county courts ... and so the absence or rarity of the action cannot be deduced from an examination of the plea rolls. Although rare in the king's court, actions of account may well have been frequent, by writs of *justicies*, in the county courts'.

However, whatever its relationship in time with manorial accounts, it may in any case be suggested that the action of account merely implies a prior obligation to *account*, not necessarily to submit to an *audit* (albeit the action itself involved the use of auditors appointed by the court). Since a voluntary accounting was a bar to an action of account (Baker, 1990, p. 412), rendering an account that was not audited may well have sufficed. Milsom (1966, p. 544) notes that 'if a relationship of accountability existed between the parties it should be ended by an account; and this could be formal or private. A private accounting was as much a cause of action in debt as a formal account before auditors.... It was also as effective a plea if an action of account was brought on the original relationship'. All that was required to justify a plea of *plene computavit* as a defence to the action was for the 'defendant to show that he and the plaintiff had agreed upon all items of the account and had struck a balance' (Langdell, 1889, p. 252). If an unaudited account was sufficient then it may be suggested that the monitoring of the accountant's actions that seems to have accompanied most manorial accounts was not itself a legal requirement but one that may be explained by agency theory.

In any case, it is important to note also that once the action of account had evolved, and brought with it an implied obligation to account, one of the defences to the action that a bailiff could plead was that it had been agreed that he would be free of the obligation to account, i.e., it was possible as part of the contract defining the relationship to contract out of the obligation. This is clear from the case of *Rivers v. Iseude* in 1311, where it was accepted as a defence to an action brought by Richard de Rivers against William Iseude that, by letters patent, Richard had 'granted for himself and his heirs that the said William should be quit of every kind of action of account' (Year Book 5, Edward II, 1311, p. 4). And the deed appointing William as Bailiff of West Mersea was accepted as evidence of this agreement.

The action of account and the *excessus* balance

As was noted above in relation to the Bogo de Clare case, the outcome of an action of account was sometimes the finding of an *excessus* balance in favour of the accountant. And it is clear from such actions that this balance must have rep-

resented payments made by the bailiff from his own money (whatever the source of that). However, those cases where the accountant was found in credit provide some interesting observations on the 'one way character of accounting relationships which treated payments as diminishing the obligations created by receipts but not as creating positive claims' (Milsom, 1966, p. 540). Langdell (1889, p. 252) explains the problem:

> The theory of these items of discharge was that they were paid by the defendant, not out of his own pocket, but out of the money in his hands belonging to the plaintiff; and hence they did not constitute independent claims in favor of the defendant and against the plaintiff, but were mere items in the account; and the only way in which the defendant could enforce them or avail himself of them was by procuring them to be allowed in his account. And this was so, even though as sometimes happened the defendant's payment exceeded his receipts....

The accountant in credit therefore had to rely on the audit for his justice, and the audit, under the action of account, had to be conducted—in the words of Bereford C. J. in 1311—according to 'reason and equity' (Plucknett, 1954, p. 28). These words were reiterated in 1326 by Stonor J. in a case where an *excessus* balance arose, when he noted:

> Account shall be conducted by equity and not by the rigour of the law, as by allowing things which ought to be allowed and by disallowing things which ought to be disallowed; wherefore, since it is found before the auditors that he had used his own money for the profit of the manor, and that allowance was given to him for this in the account, it seems that is enough to entitle him to be answered. (Quoted in Plucknett, 1954, p. 29)

It would appear, however, that, in view of this one way accountable relationship, an accountant who knew himself to be in credit was not able to bring an action of account against the lord, and if the lord refused to assign auditors to hear the account, or to hear it himself, presumably there was little the accountant could do.[18]

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[18] A further technical distinction in the nature of the relationship is shown by the different treatment accorded by the law to the lord in credit compared with the accountant in credit. If the auditors found a balance owing to the lord, they could commit the accountant to prison until he paid what was owing. If, however, the balance were in favour of the accountant, the auditors had no power to commit the lord, nor could they order payment of the amount due. In such circumstances the accountant had to bring an action of debt to enforce payment of the amount due to him. Even then the lord was able to wage his law; such wager was, however, denied to the accountant even when, as occurred later on, the auditors lost their power to commit so that the lord had to bring an action of debt to recover the amount due (Milsom, 1981, p. 277).

Concluding comments

There are obvious problems in trying to compare historical relationships based on feudal institutions to the relationships posited by modern economic theory where free agents may contract as they wish. There may be problems, too, caused by chance survival of legal and accounting records. However, it does seem tenable that many of the financial relationships between a lord and the reeve may be explained by the tenets of agency theory and that manorial accounting and audit would have existed—and indeed did exist—independently of any general legal concept of accountability.

The *excessus* balance—as Postles noted—is an ambiguous phenomenon, reversing as it did the normal indebtedness between lord and reeve, and raising the question how the accountant paid more than he received. Both the existence of the balance, and its subsequent scarcity, may, however, be seen to be compatible with that aspect of agency theory which strives to ensure and explain maximisation of the joint utility of principal and agent through the design of incentive schemes for remuneration.

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'True and Fair': UK Auditors' View

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Abstract—An earlier paper surveyed the behaviour of finance directors of the 900 largest UK companies with respect to giving a true and fair view in annual accounts. This present paper results from personal interviews with technical partners of all the 20 largest UK auditing firms (which includes the auditors of nearly all the companies in the previous survey). The paper examines the operational meaning of 'true and fair' to large auditing firms, and how it fits into the context of law and standards. It is concluded that one effect of the requirement as it works in practice is to give support to auditors' views in areas not yet covered by accounting standards. Contrasts emerge between the interpretations of directors and those of auditors.

The actions of financial directors of large UK companies with respect to ensuring truth and fairness of annual accounts are examined by Nobes and Parker (1991). This present paper is concerned with the actions of the *auditors* of large companies. In addition to discovering what auditors do (or what they say they do), we compare the differing ways in which directors and auditors interpret true and fair in practice.

It has been the duty of the auditors of UK companies since 1948 to report on whether or not the financial statements they have audited give a true and fair view (TFV). The giving of a true and fair view is also required by other legislation, for example that applying to the Port of London Authority and the Post Office (Williams, 1985, pp. 25–26). The precise requirement as to true and fair was amended in 1981 and again in 1989. At the time of our survey the relevant legislation was contained in s.228 of the Companies Act 1985. Under this section the obligation to give a TFV overrides the detailed accounting requirements of the Act. If financial statements drawn up in compliance with those requirements do not provide sufficient information to give a TFV, additional information must be given. If compliance plus additional information still does not give a TFV, the detailed requirements of the Act must be departed from. No reference was made in law to

compliance with accounting standards.[1] Despite the importance of the TFV concept, the Act provides neither a nominal nor an operational definition, and this gap has not been filled by decided cases. Nominal definitions of true and fair are discussed in, for example, Chastney (1975), Flint (1982), Harris (1987) and Nobes and Parker (1991) but no consensus has been reached.

This is a paper about both truth and fairness and the audit process. It is not our purpose to ask why companies are required to be audited or why they should be required to make detailed accounting disclosures or to give a true and fair view. These are all taken as given. We treat auditing as a technical activity and do not concern ourselves directly with the rationales for auditing which can be derived from information economics or agency theory, with the structure of the market for auditing services, or with the sociology of the auditing profession. Nevertheless, we hope that our results may be of interest to researchers in these areas especially insofar as we comment on the possible difference of approach to TFV of the Big Eight and the 'Next Twelve' and the way in which the audit of truth and fairness may affect the relationship between a company's directors and its auditors.

Research design

We carried out our research by means of a questionnaire (reproduced in Appendix III) and structured interviews with the 'top 20' UK audit

[1]Since the period of our survey the Act has been amended to make it clear that departure need not necessarily be a secondary option to the provision of additional information. The Act no longer specifically refers to an override, and it obliges directors to state whether accounts have been prepared in accordance with applicable accounting standards and to give particulars of any departure therefrom.

firms[2] at the date of our survey. The top 20 was taken as representing the largest UK firms. Although relative rankings within the top 20 (as reported in *Accountancy*) changed over the period of our two surveys, the constituent firms remained constant, as indeed they have since, apart from mergers which have reduced the number to 17.

In order to enable an approximate comparison with our directors' survey of the top 900 companies in the *Times 1000* 1985/86, it was necessary to determine the auditors of these companies. An investigation of the majority[3] of these established that over 80 per cent were audited by the largest 14 firms. We believe, therefore, that our survey of the largest 20 firms at that date captures nearly all the relevant auditors.

One criticism of questionnaire surveys (such as that in Nobes and Parker, 1991) is that there is too much scope for misunderstanding by respondents, misinterpretation of responses by researchers, and general loss of nuance. However, with a survey of 900 directors, a more personal approach would have been impractical. By contrast, for this present survey, we were able to carry out personal interviews, ranging in length from one to three hours, with representatives of all of the then top 20 firms. That is, this can be seen not as a sample, but as a survey of the whole population of the 20 largest firms, with no non-response. In the case of each firm we interviewed a technical partner, or some equivalent such as the director of technical services. In several cases, more than one partner or other staff member was present. In all cases, it was made clear that we wished to discuss listed and other large clients with which the interviewees were familiar (see below).

It is possible to argue that technical partners are atypical members of large firms. It is the audit partners not the technical partners who sign audit reports. Moreover, it is often argued that technical partners are less likely to share the view of their clients[4] and to accept accounting policies favourable to clients than are audit partners. There is certainly anecdotal evidence to this effect. How-

ever, any one interviewee would be atypical; and the advantage of technical partners is that they usually have considerable experience with their firms and that they are more likely to be familiar with the interesting cases that test the meaning of the TFV.

The interviews were mainly carried out in summer 1989, before the enactment of the Companies Act 1989 which made small changes to the TFV requirement (now s.226 of the Companies Act 1985 as amended) and introduced a large number of detailed rules concerning group accounting. That is, there had been no significant changes in rules between our directors' and auditors' surveys.

In order to draft a questionnaire on the actions and views of auditors we examined:

(1) the Auditing Standards and Guidelines issued by the Auditing Practices Committee (APC) of the Consultative Committee of Accountancy Bodies (CCAB);
(2) the published audit manuals of leading UK accountancy firms;
(3) the results of our survey of UK financial directors.

The questionnaire was then refined by pilot interviews (at which both researchers were present) with the technical partners and other technical staff of two large accountancy firms.

The references to true and fair in the Auditing Standards and Guidelines are of a general nature only. The original (1980) auditing standard on the Audit Report (current at the date of our survey) stated that, when expressing an opinion that financial statements give a true and fair view, the auditor should be satisfied, *inter alia*, that:

(a) all relevant Statements of Standard Practice (SSAPs) have been complied with, except in situations in which for justifiable reasons they are not strictly applicable because they are impracticable or, exceptionally, having regard to the circumstances, would be inappropriate or give a misleading view; and
(b) any significant accounting policies which are not the subject of SSAPs are appropriate to the circumstances of the business.

The standard does not state that a TFV can be achieved by adherence to SSAPs but it does appear to suggest that they are of the utmost importance. The Accounting Standards Committee was set up in part in order to 'give a more definitive approach to the concept of what gives a true and fair view' (Flint, 1982, p. 22). The relationship between accounting standards and TFV is complex, as is shown later in this paper. Perceptions of truth and fairness may be influenced both by existing standards and by standards in the making.

The large UK auditing firms all have links with auditing firms in the USA. The approximate

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[2]The firms, in alphabetical order, were: Arthur Andersen; Arthur Young; Binder Hamlyn; Clark Whitehill; Coopers & Lybrand; Deloitte, Haskins & Sells; Ernst & Whinney; Grant Thornton; Hodgson Impey; Kidsons; KPMG Peat Marwick McLintock; Moore Stephens; Moores & Rowland; Neville Russell; Pannell Kerr Forster; Price Waterhouse; Robson Rhodes; Spicer & Oppenheim; Stoy Hayward; and Touche Ross.

[3]Of the 575 companies in the top 900 where the auditors were easy to identify in *Who Audits the UK* (Bohdanowicz, 1984), 477 out of the 575 (i.e. 83%) were audited by 14 large firms of auditors.

[4]Technically, of course, the client of the auditors might be seen to be the body of shareholders or the company as an artificial person. However, in the questionnaire and from now on in this paper, 'clients' is used to mean the directors who, as agents of the shareholders, in effect appoint and arrange the remuneration of the auditors.

American equivalent of TFV is 'present fairly in conformity with generally accepted accounting principles'. US auditors are required by Statement on Auditing Standards No. 5 to make judgments as to whether the accounting principles selected and applied have general acceptance and are appropriate in the circumstances; the financial statements including the related notes are informative of matters that may affect their use, understanding and interpretation; the information in the financial statements is classified and summarised in a manner that is neither too detailed nor too condensed; and the financial statements present the financial position, results of operations and changes in financial position within a range of acceptable limits.

Audit manuals make few explicit references to a true and fair view. All those inspected refer to true and fair as a legal obligation and as a component of the opinion paragraph of the audit report. Reporting on truth and fairness is stated to be the primary objective of an audit. The only manual, so far as we could ascertain, which attempts an operational definition of truth and fairness for an auditor is that of Coopers & Lybrand (1986/7, section 101.05; see Appendix I for quotations). It is said to be implicit that substance should take precedence over form as part of giving a TFV. In particular (section 810.13):

(a) Accounts which mislead, or potentially mislead, cannot give a true and fair view.
(b) Artificial transactions should not be accounted for as though they were real.
(c) There has to be proper accounting and disclosure of liabilities, contingent liabilities and commitments.

The manual states (section 101.08) that following a SSAP might give a misleading view but does not give an example.

The Neville Russell audit manual (1988, Part 1, p. 230) states firmly that true and fair defies definition but that consideration of truth and fairness will include consideration of the appropriateness and consistency of the accounting policies adopted, whether the amounts at which assets, liabilities, profits and losses are stated are 'fair', whether all significant information has been disclosed, whether the financial statements are presented in a manner which 'assists the readers' understanding of the statements as a whole, bearing in mind the relative importance of individual items', and whether relevant SSAPs have been observed.

The results of our earlier financial directors' survey can be summarised as follows:

(1) The majority of directors take no *specific* actions to ensure truth and fairness.
(2) Directors rely heavily on auditors to check compliance with the detailed rules of company law and accounting standards and less heavily on auditors to check compliance with the requirement to give a true and fair view.
(3) The majority of directors regard 'true' as the same as 'fair'.
(4) Very few directors would not depart from standards in order to give a true and fair view.
(5) Some directors would not depart from the detailed rules of the Companies Act in order to give a true and fair view.
(6) A majority of companies are required by their auditors to provide a statement that the annual financial statements give a true and fair view.

It is the directors not the auditors who are responsible for ensuring that the accounts give a TFV. To what extent do auditors rely upon the directors? To do so entirely would make the audit report worthless; not to do so at all would seem to be very difficult. A reading of the audit manuals suggests that some, but not all, audit firms require directors to state in a letter of representation that the financial statements give a TFV. There is no mention, however, of a TFV in the draft letter of representation in the Auditing Guideline on 'Representations by Management'.

Since there is a clear responsibility in the Companies Act for the directors to produce true and fair accounts, it can be argued that a formal representation by them that they have done so is of minor importance. On the other hand, the lack of any mention in the annual report of a TFV other than in the auditors' report may suggest to readers that it is the auditors not the directors who are primarily responsible for the truth and fairness of the financial statements.

Is 'truth' distinguishable from 'fairness'? This is not a point discussed by most manuals. An earlier version of the Coopers & Lybrand manual (1981, p. 10), however, stated that the words 'true and fair view' were intended to be read together. Hopkins (1984, pp. 50–1) reproduces a Pannell Kerr Forster diagram which distinguishes between 'truth', 'fairness' and 'compliance with legislation and standards'. Our previous survey disclosed that most financial directors do not make a distinction.

On the basis of our reading of the Auditing Standards and Guidelines, the audit firm manuals, and the conclusions of our financial directors survey, our expectations were as below. All references to 'audit firms' are, unless otherwise stated, to the top twenty audit firms in the UK at the date of our survey.

(1) Audit firms do not carry out any procedures to test TFV which are separate from those used to test compliance with the detailed provisions of the Companies Act and accounting standards.

(2) The increasing complexity of company legis-
lation and accounting standards has not led
audit firms to change their procedures with
respect to TFV.

(3) Audit firms do not distinguish between what
is 'true' and what is 'fair'.

(4) Audit firms rely partly on a client's directors
to ensure that the accounts give a true and
fair view.

(5) Audit firms do not require client companies
to state that in the directors' opinion, the
accounts give a true a fair view.

At the time of our survey the Big Eight formed
a clearly identifiable class of very large multina-
tional accountancy firms. Because of their size,
prestige, high profile and a client base more biased
towards large listed companies, it could be argued
that they are able to exert more pressure on clients,
take a more sophisticated view of TFV or be more
vulnerable to litigation in cases where TFV was in
doubt. The US literature certainly advances this
view. Dopuch and Simunic (1982) suggested a
two-tier market structure for audit, in which the
Big Eight were more competent, more indepen-
dent, or both. De Angelo (1981) links audit firm
size to investment in reputation and hence to
expected quality and independence. Wallace (1980)
and Benston (1985) suggest that the Big Eight are
more competent and credible. We therefore further
expected:

(6) There is a difference between the actions of
the Big Eight audit firms and the 'Next
Twelve' UK audit firms.

These six expectations determined questions 1, 2,
3, 6, 9, 11, 12, 13 and 14 in our questionnaire (see
Appendix III). Questions 4, 5, 7, 8, and 10 were

added to enable additional comparisons to be
made with the results of our financial directors'
survey.

We deliberately did not ask our respondents to
provide us with a nominal definition of true and
fair. Our interest in this paper is in how UK
auditors operate the TFV requirement in practice.
In the final section we attempt to identify the
importance of the TFV requirement, and to
suggest the role it plays in contemporary UK
financial reporting.

Survey results

The survey included 14 closed-ended questions,
the results of which are shown in Table 1 for all 20
firms. Appendix II repeats these results, but shows
the Big Eight separately (the survey was carried out
before the mergers of 1989/90). As reported below,
we examined whether the Big Eight were different
from the Next Twelve. The responses are discussed
by subject in the paragraphs that follow, and this
includes answers to the open-ended questions
(no. 6 and 'further particulars' relating to several
closed-ended questions).

Separate Procedures to Test True and Fair

Our expectation was that audit firms do not
carry out any procedures which are separate from
those used to test compliance with the detailed
provisions of the Companies Act and accounting
standards. Table 1 shows that 9 firms answered
'yes' to Question 1 about the existence of specific
procedures. However, in nearly all cases, the 'yes'
related to a review by a second partner for all listed
companies or sensitive cases, where one of the
second partner's particular duties was to check for
TFV. For example, one respondent replied that a

Table 1
Responses to Closed-Ended Questions (see Appendix III for full questions)

Question	Yes	Partly	Yes and No*	No
1. Separate procedures to check TFV?	9		11	
2. Did 1981 Act change procedures for TFV?	5			15
3. Do you distinguish 'true' from 'fair'?	16			4
4. Has client wished to depart from a standard to give TFV?	15			5
5. Has firm persuaded client to depart from a standard?	4			16
7. Has client wished to depart from detailed legal provisions to give TFV?	14			6
8. Has firm persuaded client to depart from detailed legal provisions?	8			12
9. Does Act contain obstructions to TFV?	8			12
10. Has client provided additional information to give TFV?	19			1
11. Have standards changed procedures for TFV?	6		3	11
12. Does firm rely on directors for TFV?	0	16	4	0
13. Does firm require letter from directors on TFV?	6			14
14. Should law change to require directors to state TFV?	14			6

*Responses were classified as 'Yes and No' when the answer was 'yes' for some aspects but 'no' for others;
see text under 'Survey Results'.

'Second audit partner [is] required on certain larger clients, who are more likely to present such a problem. Partner's responsibilities include review of accounts and all potentially contentious areas'. Another indicated that there was an overall review of the accounts for 'reasonableness' and a consideration of the impact of large, unusual and related party transactions. As the 11 'yes and no' answers indicate, our respondents found difficulty in giving a simple answer to this question. For example, one of these respondents stated that 'Whilst we have no "procedures" as such we believe that manager/partner review of accruing and unusual transactions, including reference to our National Technical Department on points of difficulty, picks up "truth and fairness" problems. We believe that an understanding of the business and transactions involved will highlight potential problems'. Another reported the existence of an independent team whose function was to challenge *all* audit opinions.

We also expected that the increasing complexity of company legislation and accounting standards has not led audit firms to change their procedures with respect to TFV. The responses to Question 2 show that most firms had not changed their procedures for checking for TFV as a result of the enormous expansion of legal accounting rules introduced by the Companies Act 1981, apart of course from adding many points to a compliance checklist. In some ways one might have thought that there was now less need to check for TFV but, since the 'specific' checks mentioned are rather vague, the lack of change after 1981 is not surprising. One respondent noted that the Act encourages a 'rule book' approach.

A slightly larger number of respondents reported that the gradual expansion of *standards* had caused a change in procedures for checking TFV, beyond merely adding more details to a compliance checklist (Question 11). Those respondents who explained the change reported that there was now *less* need to check for TFV because of the reduced flexibility brought about by the standards programme. The increase in the number of standards had 'minimised the area of argument'.

More subtly, several respondents suggested that the meaning of TFV had changed as a result of standards. As one technical partner put it, '"true and fair" moves on and takes on additional dimensions with each accounting standard'. For example, it would not now be 'true and fair' if finance leases were uncapitalised; presentation has become more capable of being unfair; ED49 ('Reflecting the substance of transactions') would lead to major changes if it became a standard. Another respondent stated that as a result of standards users have higher expectations but there was more scope for 'loop-holing' (i.e. following the letter rather than the spirit of a standard).

Truth as Opposed to Fairness

We did not expect that audit firms would distinguish between what is 'true' and what is 'fair'. In fact a large majority of respondents could and did distinguish between truth and fairness (Question 3). Of those four who draw no distinction, two said that they *could* make a distinction but did not do so in practice. Of those who distinguish, four mentioned that normally the expression is a portmanteau, including one who noted that the portmanteau expression means more than the sum of its parts. Several respondents volunteered that 'fair' was more important than 'true'; none suggested the reverse. Interpretations of the words by our respondents are given in Table 2. 'Fair' is given a more diverse interpretation than 'true'. Walker (1984, p. 20) argues that it may not be that 'true and fair' is more than the sum of its parts but that it means something different from its parts. This was not suggested by any of our respondents.

Additional Information

One way of distinguishing operationally between 'truth' and 'fairness' would be to report 'truth' (i.e. the form) in the financial statements and to add 'fairness' (i.e. the substance) in the Notes. None of our respondents put the position as simply and crudely as this, but a very obvious effect of the TFV requirement is the need to give additional information to that which the rules directly require (Question 10). The giving of additional information is, as might be expected, more frequent than departures. All but one of the respondents could think of examples of additional information,

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Table 2
Respondents' Interpretation of 'True' and 'Fair'

True
Based on fact
Undistorted facts
Correct
Complies with rules
Not in conflict with facts
Objective
Correct, within materiality
Adherence to events
Factual accuracy

Fair
Not misleading (three times)
Substance over form (twice)
Proper reflection
Putting in right context
Consistent with underlying reality
Ability to understand what has really gone on
In accordance with rules in context
Reasonable
Gives right impression
Whether reader receives right message

Table 3
Examples of Extra Disclosures Required to Give TFV

Pro forma statements for off-balance sheet finance (six times)
Sale and commitment to repurchase (twice)
Amplification of unusual or exceptional circumstances
Recoverability of ACT
Nature of extraordinaries
Currency exposure
Disclosure of *ex gratia* compensation
Details of unconsolidated uncontrolled foreign
   'subsidiaries' or 'associates'
Method of taking profit on long-term contracts
Pro forma concerning post-year-end acquisition
Related party transactions
Contingencies and commitments
Pension contribution holiday
Value of buildings for a non-going concern

for most of them including cases where the firm had to encourage or persuade the client to disclose. Table 3 summarises the extra disclosures deemed necessary.

The extra disclosures are most common in controversial areas not yet explicitly covered by law or standard. Various areas of 'creative accounting' such as off balance sheet finance and sale and commitment to repurchase are well to the fore. Another example is related party transactions.

Departures from Law and Standards

Most firms (15 and 14 respectively) reported that various clients had wished to depart from standards and from law in order to give a TFV in the previous five years (Questions 4 and 7). Two firms said that the potential 'law breakers'[5] had been dissuaded. Our respondents' examples of the reasons for these departures are given in Table 4. Nevertheless, these examples were said to be rare. A distinction can be made between (i) 'general' departures from the law (those made by nearly all companies, usually where compliance with a SSAP resulted in possible contravention of a detailed provision of the Companies Act), and (ii) 'specific departures' (those arising from problems peculiar to a particular company). Minor variations from prescribed balance sheet and profit and loss formats seem not to be regarded as departures.

Interestingly, some firms have had to encourage or persuade clients to depart from a standard (4 respondents to Question 5) or a law (8 respondents to Question 8). The examples (intended as illustrations not as a complete listing) supplied by our respondents are given in Table 5.

The examples given in Tables 4 and 5 are not easy to categorise but many of them fall into areas where standards are not yet in place because the area is relatively new (e.g. marking to market, off balance sheet schemes), controversial (e.g. aspects of the valuation of stocks and work in progress, off balance sheet schemes) or acceptable to accountants but not in accordance with the less flexible detailed legal rules introduced in 1981 (e.g. marking to market). The influence of overseas standards is also apparent (e.g. fully accounting for deferred tax).

As noted at the foot of Table 4 some standards specifically require the details of the law to be departed from. Some of the departures from law relate to standards that have since been amended to comply with the letter of the law, for example, as in SSAP 9 (revised), by re-defining work-in-progress as 'amounts recoverable on contracts'.[6]

Perceived Significance of TFV

The responses reported above suggest that the TFV, in some cases, has a major impact on financial reporting, and that auditors can be significant in the process. Most respondents thought that TFV can be a powerful means of overriding detailed legal provisions (Question 6). Some thought that nothing was excluded from its scope, and others that there was little agreement on which matters might be excluded: group structure and directors' disclosures were suggested. According to one respondent, s.228(3) of the Companies Act 1985 simply means that 'accounts must be first and foremost true and fair rather than prepared in accordance with predetermined rules'. On the other hand, one technical partner was clear that the

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[5] Of course, breaking a detail of the law may be necessary in order to give a TFV. So, serving the TFV may sometimes require the auditors to condone or encourage 'law breakers'.

[6] The UK is unusual in its *requirement* for departures from the details of law. Such departures are not permissible in, for example, Germany, France, the USA and Australia.

Table 4
Examples of Causes of Departure from Standards and Law

Standards departed from	Extraordinary and exceptional items (three times) (SSAP 6) Taking profit before contract agreed (twice) (SAAP 2) Base stock for sugar (twice) (SSAP 9) Non-revaluation of investment property (twice) (SSAP 19) Lack of significant influence over an overseas 'associate' (SSAP 1) Non-material item treated as exceptional (SSAP 6) Prior year items (SSAP 6) Stocks of tea at realised values (SSAP 9) Stocks of wool at selling price less costs (SSAP 9) Marking to market (SSAP 9) Use of completion method on long-term contracts (SSAP 9) Taking profit on short-term contracts (before revision of SSAP 9) Lack of funds flow statement (SSAP 10) Non-depreciation of buildings (SSAP 12) Fully accounting for deferred tax (SSAP 15)
*Details of law departed from**	Formats; distinction of liabilities and capital (twice) Taking unrealised profits (twice) Refusal to disclose information Netting expenses and revenues Non-consolidation of a subsidiary Consolidation of a non-subsidiary

*Some standards specifically require the detail of the law to be departed from (eg. SSAP 19, SSAP 20). These have been ignored here.

Table 5
Examples of Reasons for Persuading Clients to Depart from Standards or Law

Standards	Marking to market: valuation (twice) (SSAP 9) Dates of acquisition and disposal for consolidation (SSAP 14)
Law	In order to correct for an off-balance sheet scheme (three times) Marking to market: profit Treatment of contract work-in-progress

section does not give directors 'an open ended option to disregard the detailed measurement, presentation and disclosure requirements of the Act'.

Nearly half the respondents thought that the law contained some obstructions to enabling a TFV to be given (Question 9). Some thought that it merely enabled directors to hide behind the law; some that the law sometimes made the TFV very difficult for auditors and directors. Too many details in the Act, said one respondent, can drive out fairness. A second mentioned the danger of 'unthinking compliance' and a third considered that the rules could be 'easily subverted'. The most frequently mentioned problems were connected to the definition

of subsidiaries in the Companies Act 1985 before its amendment in 1989. However, with the new definitions and with the strengthening of the TFV[7] introduced by the 1989 Act, these problems may be reduced. It must be said that the Accounting Standards Committee frequently met legal objections to its plans; e.g. in 1989 on government grants and on marking to market (see Nobes, 1990).

Auditors' Relationships with Directors

Unsurprisingly, no audit firms said that they fully relied on directors to ensure a TFV, and none said that they put no reliance on directors (Question 12). Those respondents who explained further said that they relied on directors for some estimates and for internal knowledge, particularly as the clients had many qualified accountants working for them. Nevertheless, the directors' answers are reviewed and tested. Directors are not relied upon

[7]Under s.228 of the original Companies Act 1985, it seemed that directors were required first to give extra information before resorting to a departure from any legal requirements. This problem appears to be absent in the new s.226, as noted in footnote 1.

if there is experience of difficulty with them or if the auditors feel uncomfortable about their reliability. More reliance is placed on directors where internal control systems are seen to be good. Thus some auditors rely on some directors for some aspects of TFV.

A minority of the audit firms (six) require directors to commit themselves in writing to the fact that their accounts give a TFV (Question 13). One respondent stated that his firm was opposed to such a statement on the grounds that it would make the auditor feel too secure. However, a majority (fourteen) thought that directors should be required by law to state publicly the truth and fairness of their accounts (Question 14). It would, suggested one respondent, 'concentrate the mind'. Another thought such a requirement would be less useful for large companies where the directors are 'more likely to understand their responsibilities and therefore the significance of their signatures on the accounts'. A third thought it unnecessary since the directors already sign the accounts. Another respondent stated, however, that it was his firm's experience that 'many view this as little more than authorising the release of the accounts for distribution to shareholders, or, even worse, an auditor-imposed requirement'. It might be thought curious that some auditors would like a change in the law to ensure public confirmation of a TFV but have not yet asked for private confirmation. A possible explanation is that the latter is regarded as part of the gathering of audit evidence whereas the former is seen as a question of the directors' responsibility to the shareholders (Chandler, 1983). As already noted, the draft letter of representation in Auditing Guideline on 'Representations by Management' does not mention truth and fairness.

Big Eight v. Next Twelve

We expected to find a difference between the actions of the Big Eight and the Next Twelve UK audit firms. The disaggregated survey data in Appendix II were used to calculate the results for the ten yes/no questions shown in Table 6. Of these questions, the Big Eight responded 'yes' more often than the Next Twelve for all questions,[8] except for equal response on question 2. It is noteworthy, however, that except for questions 8 and 9 the Big Eight and the Next Twelve were in agreement in either giving a majority of 'yes' answers or a majority of 'no' answers.

Question 8 concerned 'persuading' clients to depart from detailed legal provisions. The results suggest that the Big Eight (62.5% 'yes') have more persuasive power or perhaps more need to per-

Table 6
Big Eight and Next Twelve

Questions (see table 1)	Big 8 'Yes' %	Next 12 'Yes' %
2	25	25
3	87.5	75
4	87.5	66.7
5	25	16.7
7	87.5	58.3
8	62.5	25
9	50	33.3
10	100	91.7
13	37.5	25
14	87.5	58.3

suade (because of the size and complexity of their clients' activities) than the Next Twelve (25% 'yes'). Both the Big Eight and the Next Twelve gave more 'yes' answers than 'no' answers to those questions (4, 7 and 10) which refer mainly to clients wishing to depart and providing additional information. Not surprisingly, larger firms found it easier to provide examples for the four questions mentioned in this paragraph (and question 5), because they have more large clients.

Question 9 asked whether the law was thought to contain potential obstructions to TFV. Half the Big Eight thought so, but only a third of the Next Twelve. Question 14 asked whether the law should be changed to require directors to state that the accounts give a TFV. This received more support from the Big Eight (87.5%) than from the Next Twelve (58.3%).

Directors and auditors: a comparison

Some of the questions asked in the survey of directors reported in Nobes and Parker (1991) are directly comparable to the auditors' questions reported on here; these are summarised in Table 7.

The most interesting difference of opinion concerns whether 'true' can be distinguished from 'fair'. Among finance directors, only 17% distinguish, whereas 80% of the auditors distinguish (with half of the remainder saying that they would also be able to distinguish). Although most finance directors are qualified accountants, their approach to TFV differs significantly in this respect from that of technical audit partners. It is suggested in Nobes and Parker (1991) that the reason that most directors did not make a true/fair distinction was that they were rule-oriented. This implies that the major cause of the difference between auditors and directors is that auditors have a different interpretation of fair from that of directors, rather than a different interpretation of true.

The other four topics examined in Table 7 concern matters of fact. The first three relate to

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[8] It may be that the Big 8 auditors answered differently because their clients are different on average. This might have affected the answers to questions 4, 5, 7, 8 and 10.

Table 7 Directors and Auditors		
	Directors	Auditors
'Opinions'	%	%
Distinguish between true and fair	17	80
'Facts'		
Client* departed from law for TFV	14	70
Client* departed from standard for TFV	32	75
Client* has provided more information for TFV	32	95
Directors provide statement on TFV	65	30
*As explained in the text, the auditors are reporting on a range of clients.		

departures and the provision of additional information. The auditors' percentages are markedly higher than the finance directors'. This is to be expected: finance directors were answering a question referring to their own company; auditors could draw upon the experience of all the clients of the firm. The great majority of auditors reported that clients had departed from laws and standards in order to give a TFV, and nearly all reported examples of additional information being given. Not surprisingly, these examples known to the auditors seem to come from a minority of companies, as Table 7 suggests.

The final comparison is hard to explain: 65% of directors say that they provide statements to the auditors confirming a TFV, whereas only 30% of the firms say that they ask clients for one. This could in principle be explained if auditors with more large clients than average were more likely to ask for such statements. Indeed, Table 6 shows that a larger proportion of Big Eight auditors (37.5%) than Next Twelve auditors (25%) do ask for statements, but this difference is obviously not large enough to explain the discrepancy. A tentative explanation is that directors were referring to informal statements and auditors to formal statements. An alternative (unlikely) explanation is that such statements declined in popularity in the short period between the two surveys.[9]

The importance of true and fair

Our survey results and subsequent discussions with our respondents suggest that the TFV requirement is used by auditors as a means of obtaining compliance not only with extant law and standards but also with auditors' views of what the laws or standards ought to be on issues which are so new or so controversial that there is as yet no established rule. Less often, it is used by auditors to

modify, in the interests of what they perceive as fairness, rules already established. Insisting on a TFV provides an argument more quickly and readily available to the auditor than changes in the detail of a law or standard (although this may happen, as it has in the case of controlled non-subsidiaries). TFV is, in a sense, an article of belief, a *credo*, a symbol. It is in this context that we accept the suggestion of a lawyer (Williams, 1985, p. 30) that the TFV requirement exists mainly for the benefit of auditors.

Whether or not directors find the use of TFV by auditors in their interests will depend upon the circumstances. Presumably the directors of investment companies do not disapprove of the use of the TFV override in SSAP 19. On the other hand, the evidence of our survey shows that the provision of additional information and departures from law or standards is sometimes the result of auditor pressure. Nevertheless it would also be possible for auditors to use TFV as an argument in favour of practices that directors wished to adopt.

TFV can thus be seen, especially in recent years, as a factor in the relationship between auditors and directors. It may often be in the interest of directors to stress legal form over economic substance. In this they may be encouraged by merchant bankers and lawyers. The controversy over off balance sheet financing has brought home clearly to auditors the danger of losing control of accounting. As one auditor has lamented:

It is the legal profession which has seized control. It is the lawyer who determines what the accountants and auditors will do, how accounts are to be prepared and what is disclosed . . . The auditor has become the servant of the lawyer and is no longer the master of his own destiny. (Brindle, 1987, p. 49)

Historically, the conjunction of 'true' and 'fair' in British law originated with the Institute of Chartered Accountants in England and Wales' witnesses to the Cohen Committee on Company Law Amendment which reported in 1945. The

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[9]An explanation suggested by one of our respondents in later discussion is that auditors ask directors for so many different confirmations that the latter may well believe that they have been asked for a TFV statement when in fact they have not.

word 'fair' was seen as an improvement on the then current 'correct',[10] partly because it was more easily distinguishable from 'true' and would stress the need for judgment. It is auditors who continue to support the TFV requirement and to make most use of it in practice.

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[10]Earlier versions in British law had included various combinations of correct, fair, full and true. Although the practice of accounting and auditing may not have changed over time in this respect, an amendment to law does at least suggest that 'fair' was seen as a better description of what good directors and auditors should aim at. For contemporary comment, see *Accountant* (1944).

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Appendix I

Extract from Coopers & Lybrand Manual, 1986/7, Section 101.05

(i) all information materially affecting the view given by the accounts is properly disclosed and is unambiguous;

(ii) a proper balance is achieved between completeness of disclosure and the degree of summarisation that is necessary if the accounts are to be clear and readily interpretable;

(iii) the information in the accounts should ensure that the conclusions which a reader might draw from it would be justified and consistent with the circumstances of the enterprise's business;

(iv) the accounts reflect the substance of the underlying transactions and balances and not merely their form; and

(v) the presentation adopted in the accounts has not been unduly influenced by management's desire to present facts in a favourable or unfavourable light.

There are also specific suggestions about assets, liabilities and results.

Appendix II

Responses to Closed-Ended Questions by Size of Audit Firm
('Big Eight' shown first, Next Twelve shown in brackets) (Percentages of Relevant Respondents)

	Yes	Partly	Yes-and-No	No
1. Specific procedures to check TFV	62.5 (75)		37.5 (25)	
2. Did 1981 Act change procedures for TFV?	25 (25)			75 (75)
3. Do you distinguish 'true' from 'fair'?	87.5 (75)			12.5 (25)
4. Has any client wished to depart from a standard to give a TFV?	87.5 (66.7)			12.5 (33.3)
5. Has the firm persuaded any client to depart from a standard?	25 (16.7)			75 (83.3)
7. Has any client wished to depart from law to give a TFV?	87.5 (58.3)			12.5 (41.7)
8. Has the firm persuaded any client to depart from law?	62.5 (25)			37.5 (75)
9. Does the Act contain obstructions to a TFV?	50 (33.3)			50 (66.7)
10. Has any client provided more information to give a TFV?	100 (91.7)			0 (8.3)
11. Have standards changed procedures for TFV?	25 (33.3)		25 (8.3)	50 (58.3)
12. Does the firm rely on directors for TFV?	0 (0)	62.5 (91.7)	37.5 (8.3)	0 (0)
13. Does the firm require a letter re TFV from the directors?	37.5 (25)			62.5 (75)
14. Should the law change to require directors to state TFV?	87.5 (58.3)			12.5 (41.7)

Appendix III

PRIVATE AND CONFIDENTIAL

Questionnaire to Auditors for ICAEW Research Study

NAME OF RESPONDENT ....

NAME OF FIRM ....

RESPONDENT'S POSITION IN FIRM ....

DATE QUESTIONNAIRE COMPLETED ....

Note: This questionnaire is intended to relate to large clients.

Questions

1(a) In order to ensure that a client company's financial statements give a true and fair view, does your firm carry out any procedures which are separate from those used to test compliance with the detailed provisions of the Companies Acts and accounting standards?

<div align="right">YES ☐</div>

<div align="right">NO ☐</div>

1(b) If "Yes", please give details, referring, where possible, to your audit manual.

1(c) If you have no such procedures, please explain why you consider them not to be necessary.

2   Have the detailed formats and valuation rules introduced originally by the Companies Act 1981 led your firm to change any of the procedures established to ensure that a client's annual financial statements give a true and fair view?

<div align="right">YES ☐</div>

<div align="right">NO ☐</div>

If "Yes", please give details.

3   In deciding whether or not the financial statements of a client are true and fair, do you distinguish between what is "true" and what is "fair"?

<div align="right">YES ☐</div>

<div align="right">NO ☐</div>

If "Yes" please give details.

4   Within the last 5 years, has a client company ever wished to depart from an accounting standard in order to give a true and fair view?

<div align="right">YES ☐</div>

<div align="right">NO ☐</div>

If "Yes", please give details.

5   Within the last 5 years, has your firm ever persuaded a company to depart from an accounting standard in order to give a true and fair view?

<div align="right">YES ☐</div>

<div align="right">NO ☐</div>

If "Yes", please give details.

6   What does your firm understand by S228(3) of the Companies Act 1985? In particular, which requirements that might affect the accounts fall outside the "requirements of this Act as to the matters to be included in a company's accounts or in notes"?

<div align="right">*continued*</div>

Appendix III—*continued*

Please interpret the "detailed provisions" mentioned in questions 7 and 8 in the context of S228(3).

7   Within the last 5 years, has a client company ever wished to depart from one of the detailed provisions of the Companies Act in order to give a true and fair view?

YES ☐

NO ☐

If "Yes", please give details.

8   Within the last 5 years has your firm ever persuaded a client company to depart from one of the detailed provisions of the Companies Act in order to give a true and fair view?

YES ☐

NO ☐

If "Yes", please give details.

9   Does your firm believe that the Companies Act 1985 contains provisions that obstruct directors and auditors in attempts to present fair accounts?

YES ☐

NO ☐

10 Within the last 5 years, has a client company ever provided additional information (without changing the numbers in the financial statements) in order to give a true and fair view?

YES ☐

NO ☐

If "Yes", (a) please give details, (b) did you have to persuade the clients to do so?

11 Have any of the accounting standards issued since 1971 led your firm to change any of the procedures it uses to test whether a client company's financial statements show a true and fair view?

YES ☐

NO ☐

If "Yes", please give details.

12 Does your firm rely on a client's directors to ensure that their accounts give a true and fair view?

WHOLLY ☐

PARTLY ☐

NOT AT ALL ☐

13 Does your firm require companies to provide a statement stating that, in the directors' opinion, the accounts give a true and fair view?

YES ☐

NO ☐

14 Would your firm support a change in the law to require directors of companies to annex to the annual accounts a statement signed by them confirming compliance with the requirement to give a true and fair view?

YES ☐

NO ☐

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CONTENTS

A Comparative International Analysis of the Impact of Accounting Principles on Profits: The USA versus the UK, Sweden and The Netherlands

Pauline Weetman and Sidney J. Gray*

Abstract—This paper explores the extent to which there are material quantitative differences in profits reported under US GAAP compared to profits reported in accordance with generally accepted accounting principles in the UK, Sweden and the Netherlands. From an analysis of Form 20-F reports filed with the SEC in the USA, there is support for the hypothesis that UK GAAP are significantly less conservative than US GAAP. On the basis of a case study approach, it seems that Swedish GAAP tend to be more conservative than US GAAP, particularly when the transfers to reserves are analysed, but there is insufficient evidence to establish a systematic pattern. In the Netherlands, on the other hand, there is evidence to suggest that Dutch GAAP are at the less conservative end of the spectrum of financial reporting measurement practices, in a position relatively similar to that of UK GAAP, although again the evidence is insufficient to establish a systematic pattern.

The purpose of this paper is to explore the extent to which there are significant quantitative differences in profits reported under US generally accepted accounting principles (GAAP) compared to profits reported in accordance with GAAP in three European countries, namely the United Kingdom, Sweden and the Netherlands. This is an important issue because the growing internationalisation of equity markets has highlighted the need to take account of international accounting differences, especially in respect of making comparative analyses of profits in the context of assessments of price/earnings ratios. While there is a growing appreciation of the existence of such differences, there is a lack of evidence about their overall quantitative impact.

The focus here on Sweden and the Netherlands as well as the UK is motivated by the fact that, in classifying financial reporting measurement practices in developed Western countries, Nobes (1989) positions Sweden and the Netherlands at two extremes of a classification structure. The Netherlands is classed as micro-based, influenced by business economics theory, while Sweden is classed as macro-uniform, influenced by government as an economic planner and tax collector. At the same time, UK and USA accounting practices are apparently closer to the Netherlands than to Sweden in that they are also micro-based, but classed as

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being influenced by business practice and pragmatism. Qualitatively, differences in practices between these countries are well documented, for example Nobes (1988) on UK/USA, Cooke (1988) on Sweden/UK, and Nobes (1990) on Netherlands/UK. However, in terms of the overall *quantitative* impact of accounting differences on measures of profit, very little empirical work has been carried out to date using published financial statements. Gray (1980) produced a comparison in respect of UK/France/Germany based on reported total profits only. Choi *et al.* (1983) analysed quantitative differences for USA/Korea/Japan. Weetman and Gray (1990) explored UK/US GAAP differences in greater detail. A case study analysis of a hypothetical company, carried out by Simmonds and Azieres (1989), illustrated the range of profit which could be reported using the GAAP of each of the EC countries, but did not link this to US GAAP or to European countries outside the Community.

Differences in GAAP, and the consequences for financial reporting

US GAAP is a useful yardstick for comparison as the USA is one of the world's major capital markets and an important source of finance for foreign companies. It also appears that significant accounting differences exist between the USA and a number of other countries including the UK, Sweden and the Netherlands. Nobes (1988 p. 83),

for example, has identified twelve matters of accounting policy for which US financial statements would require adjustment before they could be regarded as comparable to UK practice:

1. Inventories: US use of LIFO compared to UK use of FIFO may lead to lower reported profits.
2. Deferred tax: US use of full provision *and* full deferral (until SFAS 96), then full liability method compared to UK partial provision.
3. Foreign currency translation: UK is more permissive with regard to profit and loss account translation, i.e. permits either closing or average rate.
4. Fixed assets: US does not permit revaluation.
5. Goodwill: US requires amortisation compared to UK majority practice of immediate write-off against reserves.
6. Subsidiaries: US now requires inclusion of all subsidiaries.
7. Pooling: US rules differ from UK rules on merger accounting.
8. Dividends: US companies do not provide for undeclared dividends.
9. Extraordinary items: US is less liberal with regard to the treatment of gains and losses on disposals of businesses, i.e. treated as exceptional items.
10. Capitalisation of interest: US requires capitalisation under specific conditions.
11. Oil and gas: US/UK rules differ in some respects.
12. R & D: US insists on writing off all expenditure.

From the above list there are seven items which could be taken as indicating different attitudes to 'conservatism'. These items are the treatment of inventory (a consequence of US tax rules), deferred taxation, valuation of fixed assets, amortisation of goodwill, extraordinary items, interest capitalisation and research and development. Interestingly, the only US practice which is not relatively more 'conservative' than UK practice in the context of profit measurement is in respect of the capitalisation of interest. Taken overall, UK GAAP seem likely to be less conservative than US GAAP in terms of relative impact on profits.

Cooke (1988) provides a detailed review of accounting disclosure practice in Sweden, including surveys of existing practice at December 1985. He explains and illustrates the impact of the valuation rules where these differ from the UK or USA (e.g. Cooke, p. 129) but does not, however, attempt to quantify the detailed effects of such differences. From the information which Cooke provides, the following list outlines the accounting differences which might be expected in a Sweden/USA comparison:

1. Taxation: Income for tax purposes is based on the published financial statements. Special tax allowances are recorded in the income statement as 'allocations' and in the balance sheet as 'untaxed reserves'. Deferred tax is not recognised in law or in GAAP, although deferred taxes are often provided on the acquisition of a subsidiary.
2. Legal reserves: There must be a transfer of 10% of net income to a legal reserve until it represents 20% of the issued par value of share capital.
3. Fixed assets: Revaluation is permitted, using a revaluation reserve, but may not exceed the assessed value.
4. Goodwill: This should be amortised over a period not exceeding 10 years.
5. Associated companies: Not dealt with in either Swedish company law or accounting law. There is a variety of accounting practices and differences in the levels of disclosure.
6. Foreign currency translation: A variety of approaches to problems of foreign currency translation, both in the method of calculation adopted and in the treatment of translation differences.

Taken overall, the impact on profits of Swedish accounting principles seems likely to be more 'conservative' than US GAAP with particular reference to taxation effects, the amortisation of goodwill and the treatment of associated companies.

A recent comparative analysis of accounting practice in the Netherlands is provided by Nobes (1990) in which he identifies the following specific differences from US or UK practice:

1. Depreciation: For tax purposes may follow accounting depreciation, but it may also differ. Consequently depreciation is a source of timing difference which could lead to a provision for deferred taxation.
2. Deferred tax: Allocation on a full provision basis and changes in corporation tax rates are allowed for.
3. Fixed assets: May be revalued upwards, with a consequent increase in the depreciation charge.
4. Extraordinary items: Profit figures used for earnings per share calculations tend to include extraordinary items.
5. Consolidation: The Seventh EC Directive, implemented in an Act of 1988, came into force in respect of accounting periods beginning on or after 1st January 1990 (i.e. did not apply to the financial statements covered in this exercise).
6. Merger accounting: Permissible, the rules resembling those of the IASC.

7. Goodwill: May be deducted from reserves, amortised against income within one year or amortised over its useful economic life. Most companies choose deduction from reserves.

8. Foreign currency translation: In the individual company's accounts, foreign exchange gains and losses on debtors and creditors would be taken to the income statement. In translating the financial statements of subsidiaries, Dutch companies rarely use the temporal method.

9. Inventories: LIFO is allowed for stock valuation.

In items 1, 2, 4, 8 and 9 the Dutch practice appears to resemble that of the USA, while in items 3, 5, 6 and 7 it is similar to that of the UK. To the extent that Dutch accounting principles are similar to those of the UK, it would seem that the impact on profits is likely to be less conservative than that of US GAAP, although the elements of similarity with US GAAP suggest that overall the Dutch approach might be more conservative than that of the UK, relative to US GAAP.

Criteria for comparison: a 'conservatism' index

Using US GAAP as the yardstick, it is possible to make an assessment of the relationship between reported profits of other countries and those same earnings adjusted in accordance with US GAAP. This methodology may be implemented by developing an index for comparative purposes as used by Gray (1980).

Accordingly, an index of 'conservatism' was calculated, using the formula (taking the UK as an example):

$$1 - \left(\frac{\text{Profits USA} - \text{Profits UK}}{|\text{Profits USA}|} \right)$$

An index value *greater than* 1 means that the UK, Sweden or Netherlands profits are *less* 'conservative' than the US measure would have been. An index value *less than* 1 means that the UK, Sweden or Netherlands profits are *more* 'conservative' than the US measure would have been. An index value exactly *equal to* 1 indicates neutrality in comparison to US GAAP with respect to the effect of accounting standards.

The denominator has been taken as US profits to provide a benchmark against which the UK, Sweden or Netherlands profits can be compared.

Having established an overall index of 'conservatism' it is then possible to establish the relative effect of the various individual adjustments by constructing partial indices of adjustment using the formula:

Partial index of 'conservatism'

$$= 1 - \left(\frac{\text{partial adjustment}}{|\text{profits USA}|} \right)$$

For example:—	£m
UK earnings	120
Adjustments for US GAAP:	
Deferred taxation	(15)
Goodwill amortisation	(5)
Adjusted earnings per US GAAP	100

Overall index of 'conservatism'	1.2

Partial index for deferred taxation $\quad 1 - \left(\frac{-15}{100} \right) = 1.15$

Partial index for goodwill amortisation $\quad 1 - \left(\frac{-5}{100} \right) = 1.05$

The research data

An opportunity to compare profits measured under UK, Swedish and Dutch GAAP with profits measured under US GAAP is given by those companies which are obliged to report to the Securities and Exchange Commission (SEC) in the USA. The 'Form 20-F' report to the SEC is typically longer and more complex than the financial sections of the domestic company reports. Form 20-F contains additional disclosures required by the SEC but not by the domestic regulations. In particular, where the reporting company has used its domestic accounting policies, the SEC requires in Form 20-F a reconciliation of home-reported profits with the earnings which would have been reported under US GAAP. The effect of each accounting policy which differs in the two countries under comparison is quantified separately. In addition to the quantified difference, the accounting policies as they affect the company are explained by way of note, which occasionally gives further insight into the differences between domestic and US accounting practice. The reconciliations in Form 20-F may thus be used to test the extent to which profits before extraordinary items in the UK, Sweden and the Netherlands are more or less conservative than they would have been if US GAAP were applied.

The SEC requires a Form 20-F report where the company sponsors an ADR (American Depositary Receipt) which is traded on one of the national stock exchanges such as the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX) or the National Association of Securities Dealers Automated Quotations (NASDAQ). A company search agency was employed to determine the number of UK, Sweden and Netherlands companies which lodged a 20-F form with the SEC in respect of accounting periods ending between

1 July 1988 and 30 June 1989. It was found that there were 41 UK companies, 8 Swedish and 8 Dutch companies in total (see Appendix). This permits statistical analysis of the data on UK companies, with a comparison on a case study basis of Swedish and Dutch accounting practice, using US GAAP as the reference point for comparison.

Analysis and results

United Kingdom

In the case of the UK, the sample of 41 companies is a sub-set of a larger group of companies (162 in 1988 according to information contained in a list provided by Citibank) whose shares are traded in ADR form in the United States but the majority of which are exempt from the 20-F filing requirement. This exemption is available where the ADRs are traded over-the-counter rather than on one of the official US stock exchanges such as NYSE, AMEX or NASDAQ. The majority of these ADRs are sponsored by the companies, meaning that the directors have taken a positive decision to adopt a US presence (as opposed to an unsponsored ADR where investors have taken the initiative, using a US bank as authorised depositary, but where the company has no active involvement beyond supplying a copy of the annual report to the SEC). The companies not reporting on Form 20-F have therefore taken an active interest in being in the US market, the only difference being that they use over-the-counter trading rather than an official stock exchange. The commercial reason for this interest is the development of a US presence because of, or with a view to, commercial activity in the US. This commercial purpose is shared with those 41 companies which do report on Form 20-F.

The published reconciliations were found to be non-uniform in their presentation. The starting point in some cases was earnings before extraordinary items, but in others was earnings after extraordinary items. There are items, chiefly those associated with discontinued operations, which are extraordinary in the UK but are not treated as extraordinary in the USA. Since, in the UK, earnings before extraordinary items is the critical measure of earnings per share and hence is significant for investment performance indicators, it was decided to rebase all data to a starting point of UK profits before extraordinary items and to apply the US GAAP adjustments in such a way as to determine what the profits figure would have been had the US rules been applied. The overall index of conservatism was measured and tested for each of the three years 1986, 1987 and 1988, taking each year separately in order to obtain a view of the impact on reported profit on a year-by-year basis. The label '1986' means a year end on 31 December 1986 or within six months either side. It was found

that in each year there were some outlying values which would have distorted the results. The outlying values were removed before calculating a mean value and a t-statistic to establish that the mean was significantly higher than the neutral value of 1.0. Histograms were plotted to confirm that there was a spread about the mean which justified calculation of the t-statistic. A single-tailed test of significance was applied as the direction of the relationship between UK and US profits was hypothesised. More specifically, the statistical analysis was carried out to test the hypothesis that UK profits measured under UK GAAP were significantly less conservative (and therefore higher) than they would have been if measured under US GAAP.

Use of the t-statistic was justified by the sample size being greater than 30 and by inspection of the shape of the distribution of index values. In view of the problem of outlying values potentially distorting the mean, a non-parametric Wilcoxon signed ranks test was also applied, based on departures from a hypothesised neutral median value of 1.0, without adjustment for outliers. For comparison, the Wilcoxon statistic and significance levels are tabulated with the t-statistic results in the relevant tables. Using Minitab, the estimated median is also computed based on the signed ranks. This provides an alternative to the mean as an estimate of the effect of the accounting policy change and is less affected by the outliers.

The results shown in Table 1 may be interpreted as saying that in 1986 the UK reported profit was 12.3% higher than the US GAAP result; in 1987 the UK profit was 19.9% higher; and in 1988 the UK profit was 16.9% higher. The 1987 and 1988 mean index values were significantly greater than the neutral value at the 1% significance level, while the 1986 mean index was significant at the 10% but not at the 5% level. The Wilcoxon test confirms the significance of the 1987 and 1988 results.

Informal discussion with practising accountants, on an earlier draft of this paper, suggested that they perceived greater interest in the outlying values than they did in those which were more representative of the overall picture. Accordingly the index values were grouped according to measures of accounting 'materiality', taking the levels of 5% and 10% of profit as rule-of-thumb materiality limits. Table 2 shows the grouping of values and also reports the range together with information on extreme outlying values. The distribution is seen to be skewed towards a less conservative UK reported profit, but it also demonstrates that, for particular companies, the effect of a change in accounting policy can have a major impact in either direction on reported profit. The outlying values, which are all such that UK reported profit is greater than US reported profit,

Table 1
UK: Income Statements

Mean value and t-statistic for total index of conservatism

Year	N	Mean	St dev	SE mean	t	P value
1986	38	1.1233	0.4528	0.0735	1.68	0.051
1987	36	1.1988	0.4147	0.0691	2.88	0.003
1988	36	1.1694	0.3150	0.0525	3.23	0.001

(See Table 2 for list of outlying values removed)

Actual median, Wilcoxon statistic and estimated median

Year	N for test	Actual median	Wilcoxon statistic	P value	Estimated median
1986	39	1.0466	509.0	0.098	1.094
1987	40	1.1049	675.0	0.000	1.158
1988	39	1.1093	625.0	0.001	1.205

illustrate the potentially dramatic effect of different accounting principles in particular circumstances.

To analyse further these total index values, a partial analysis was attempted in order to discover and quantify the principal component policies which differ between UK and US accounting practices. The only adjustments which occurred sufficiently frequently for statistical analysis were those for amortisation of goodwill and provision for deferred taxation. The statistical results for these are discussed below, followed by a brief review of some of the other adjustments reported in the Form 20-F.

Table 2
UK: Income Statements

Total index of conservatism

Level of materiality	Index values	1986	1987	1988
UK profit 10% or more below the US profit	≤ 0.9000	9	5	6
UK profit 5% or more below the US profit but less than 10% below	0.9001–0.9500	3	3	3
UK profit within ± 5% of US profit	0.9501–1.0499	8	8	6
UK profit 5% or more above the US profit but less than 10% above	1.0500–1.0999	1	4	4
UK profit 10% or more above the US profit	≥ 1.1000	18	20	21
		39	40	40

Range:	Lowest value	0.180	0.542	0.664
	Highest value	5.779	11.745	40.083

Elimination of outliers
The following outlying index values were eliminated before calculating the t-statistic presented in Table 1:

	Index value eliminated			
Name	1986	1987	1988	*Principal cause*
Lep Group	5.779	3.757	4.833	Extraordinary items plus US deferral of recognition of profits on real estate sales
United Newspapers		11.745		Amortisation of goodwill including effect of disposal of a subsidiary
Blue Arrow			40.083	Amortisation of goodwill including write-off in respect of discontinued operations
WPP		4.124		Amortisation of goodwill
WCRS			5.454	Amortisation of goodwill
Cambridge Instruments		3.428		Extraordinary item
Jaguar			2.943	US recognition of exchange losses on forward currency contracts

Table 3
UK: Income Statements

Mean value and t-statistic for index of amortisation of goodwill

Year	N	Mean	St Dev	SE mean	t	P value
1986	36	1.1022	0.1501	0.0254	4.03	0.0001
1987	35	1.1629	0.2664	0.0450	3.62	0.0005
1988	35	1.1513	0.2238	0.0378	4.00	0.0002

(See Table 4 for list of outlying values removed)

Actual median, Wilcoxon statistic and estimated median

Year	N for test	Actual Median	Wilcoxon Statistic	P value	Estimated Median
1986	33	1.0413	559.0	0.000	1.074
1987	36	1.0806	666.0	0.000	1.100
1988	37	1.0800	703.0	0.000	1.097

1. Amortisation of Goodwill

US GAAP require amortisation of goodwill through the income statement as compared with the write-off against reserves permitted in UK SSAP 22. Thirty-seven of the companies made this adjustment. A single-tailed t-test was applied after removing one outlier for 1986 and two for each of 1987 and 1988. The results are as shown in Table 3.

The t-statistic shows that for all years the mean value is significantly greater than 1.0 at the 1% significance level. The significance is confirmed by the Wilcoxon statistic. The results may be interpreted by saying that in 1986 the profits under UK GAAP were 10.2% higher than under US GAAP because of the effect of not amortising

goodwill. In 1987 the UK profits were 16.3% higher on average and in 1988 they were 15.1% higher on average.

Table 4 shows that the distribution of mean index values grouped under categories of accounting 'materiality' confirms the relatively high incidence of index values greater than 1.0. The extreme outlying values listed in Table 4 illustrate the potentially material impact of goodwill amortisation.

The statement of adjustment to UK earnings provides a useful opportunity to gauge the effect of writing off goodwill to reserves as compared with amortisation through the income statement (see, also, Russell *et al.*, 1989 for estimates of the likely effects of a change to amortisation in the UK). All of the companies surveyed which made adjustments

Table 4
UK: Income Statements

Amortisation of goodwill: partial index of conservatism

Level of materiality	Index values	1986	1987	1988
UK profit 10% or more below the US profit	≤ 0.9000	0	0	0
UK profit 5% or more below the US profit but less than 10% below	0.9001–0.9500	0	0	0
UK profit within ± 5% of US profit	0.9501–1.0499	19	14	13
UK profit 5% or more above the US profit but less than 10% above	1.0500–1.0999	5	7	8
UK profit 10% or more above the US profit	≥ 1.1000	12	16	16
		36	37	37
Range: Lowest value		0.994	1.000	1.005
Highest value		2.300	3.693	20.333

Elimination of outliers
The following outlying index values were eliminated before calculating the t-statistic presented in Table 3:

	1986	1987	1988
	2.300	3.693	20.333
		3.415	4.774

did so because they had followed the current UK practice of writing off goodwill against reserves.

There are two main conclusions at this stage of the analysis so far as amortisation of goodwill is concerned. The first conclusion is that amortisation of goodwill is the single *most* material item in the reconciliation of earnings under UK practice with earnings under US GAAP. The second conclusion is that the relative materiality of amortisation increased from 10% of US earnings in 1986 to over 15% of US profit in 1988.

2. Deferred Taxation

A total of 40 companies made the deferred taxation adjustment in at least one year. After removal of outlying values, the mean index numbers are as shown in Table 5. The conclusion is that in 1986 UK profit was higher than US profit by 1.9%; in 1987 the UK profit was higher by 3.1%; and in 1988 UK profit was higher by 4.9%. The 1987 and 1988 results were significantly greater than the neutral value at the 5% significance level. The 1986 result was significant at the 10% level but not at the 5% level. The Wilcoxon test confirms the significance of the 1988 result and of the 1987 result at the 10% level, but shows the 1986 result as inconclusive.

The explanation appears complex but may be analysed under three main headings:

(i) the treatment of timing differences which are not expected to reverse in the foreseeable future;

(ii) the treatment of tax losses and recoverable Advance Corporation Tax (ACT) brought forward; and

(iii) the difference between the liability method and the deferral method.

One factor which is not taken into account is the tax regime. The profit is being adjusted for US GAAP but not for US fiscal regulations.

SSAP 15 in the UK allows partial provision for timing differences while US GAAP require full provision. SSAP 15 allows recoverable losses to be offset against the deferred tax liability to a greater extent than do US GAAP. This reflects a more liberal UK tax regime on time periods for loss recovery, which creates a further complication when the deferred tax liability is increased to comply with US GAAP. The increased liability is used as a basis for an increased set-off of deferred UK tax assets and thus it was not possible in most of the 20-Fs to distinguish these separate effects except in the relatively few cases where the separation was disclosed. Further, the liability method is used in the UK while the deferral method was used in the US in the periods under investigation.

This is further complicated in some cases by the switch in US practice announced in December 1987 whereby SFAS 96 in the US required full provision based on the liability method. The deadline for implementing SFAS 96 was subsequently postponed to 1990. Consequently there was a lack of consistency, twenty of the companies tested having switched to SFAS 96 in respect of some or all of the periods examined while the other twenty were still considering the effects of the change in policy. In the year of changeover there is a major adjustment which completely outweighs any other effects present.

A distribution of index numbers by category of accounting 'materiality' is presented as Table 6, which shows a heavy concentration of values within the immaterial level of ±5% of US profit but that there are outlying values which have a material effect in specific instances. In the case of deferred tax there were outliers causing the UK reported profit to be lower, either because of losses brought forward or because of an unusually high asset write-off.

Any hypothesis about the relative 'conservatism' or lack of it in UK deferred tax accounting policies

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Table 5
UK: Income Statements

Mean value and t-statistic for index of deferred taxation

Year	N	Mean	St dev	SE mean	t	P value
1986	35	1.0186	0.0688	0.0116	1.59	0.060
1987	38	1.0311	0.1120	0.0182	1.71	0.047
1988	39	1.0494	0.1220	0.0195	2.53	0.008

(See Table 6 for list of outlying values removed)

Actual median, Wilcoxon statistic and estimated median

Year	N for test	Actual median	Wilcoxon statistic	P value	Estimated median
1986	34	1.0049	354.0	0.338	1.006
1987	36	1.0163	442.0	0.088	1.025
1988	36	1.0109	462.0	0.044	1.022

Table 6
UK: Income Statements

Deferred taxation: partial index of conservatism

Level of materiality	*Index values*	*1986*	*1987*	*1988*
UK profit 10% or more below the US profit	≤ 0.9000	2	4	1
UK profit 5% or more below the US profit but less than 10% below	0.9001–0.9500	3	1	3
UK profit within ± 5% of US profit	0.9501–1.0499	26	20	23
UK profit 5% or more above the US profit but less than 10% above	1.0500–1.0999	2	7	5
UK profit 10% or more above the US profit	≥ 1.1000	5	7	7
		38	39	39
Range: Lowest value		0.062	0.619	0.865
Highest value		2.368	1.313	1.427

Elimination of outliers

The following outlying index values were eliminated before calculating the t-statistic presented in Table 5:

1986	*1987*	*1988*
2.368	0.619	none
0.371		
0.062		

(The three index values eliminated which were less than 1.0 were associated, in two cases, with adjustments for different accounting treatments of tax losses, classified by the companies as part of the overall deferred tax adjustment. The third related to a major write-down of assets reducing the tax charge on a full provision basis.)

cannot be separated from the tax regime operating at the time. If there had been a constant corporation tax rate, the analysis of actual results would have been more informative regarding the effects of partial provision. If the US had not switched from the deferral to the liability method at the end of 1987 there would have been a clearer result from the actual data.

The lack of detail in the 20-F reconciliation of UK and US profits would not have created an insurmountable problem if all the companies had complied fully with the disclosure requirements of SSAP 15 in their UK annual reports, which were also obtained for this study. The revised version of SSAP 15, which applies to accounting periods beginning on or after 1 April 1985, requires (para. 35) disclosure of the amount of any unprovided deferred tax in respect of the period to be disclosed by way of note and analysed into its major components. The UK annual reports rarely made this disclosure in respect of income statement items (although it was disclosed in respect of the full balance sheet provision).

3. Other Adjustments Made to Profits by UK Companies

There were in total approximately 250 adjustments made by the 41 companies analysed, or between 6 and 7 adjustments for the typical company (with a range of between 1 and 12 adjustments per company). A classification of the varied

reasons for adjustment may give some further insight into the technical problems facing those who seek to make comparisons between UK and US GAAP in a practical situation. The major reasons for the differences (other than amortisation of goodwill and the deferred tax adjustment) are discussed as follows:

(a) Inventories: No adjustment was observed in respect of FIFO/LIFO comparisons. The companies concerned had all used FIFO but made no reference to the potential effect of using LIFO. It is therefore possible that any results from this paper will underestimate the overall conservatism of US GAAP to the extent that LIFO is widely used by US companies.

(b) Foreign currency translation: Ten companies made an adjustment for foreign currency translation but the reasons were varied. Five had used the closing rate for translating UK income rather than the average rate required by US GAAP, with an impact of within ± 5% of US earnings in all cases. The remaining five spanned differences in treatment of long-term debt, disposal of investments, and depreciation charges. They included one instance each of adjustments 15% above and 15% below US earnings. The direction and magnitude of adjustments depended on the nature of the item and the exchange rate movement. It would seem unlikely that external analysts

could make any estimate of such an adjustment without provision of full information by the company.

(c) Fixed assets: Fifteen companies made adjustments to depreciation charges by virtue of eliminating revaluations of fixed assets. This had the effect of increasing the profit reported under US GAAP. Four companies also made specific revaluation adjustments in respect of gains or losses calculated on the disposal of assets. Five companies provided property depreciation for US GAAP purposes where none had been provided against the UK earnings. There was one example of an investment valued at directors' valuation in the UK but reduced to historical cost for US GAAP. In two cases of property sale, the US GAAP required greater assurance about the liquidity of the proceeds before allowing recognition of a gain on sale.

(d) Subsidiaries: The US requirement to include all subsidiaries was not applicable to all of the period covered. It was found that twelve companies made adjustments in respect of aspects of business combinations, due to a range of highly technical matters where the US approach to purchase accounting differs from that of the UK. These included costs which are capitalised in the UK but expensed for US GAAP, tax adjustments to fair value, the method of accounting for interest charged on deferred purchase schemes, and the timing of recognition of a gain on disposal of a subsidiary. In specific cases these adjustments had a material accounting effect but it would have been highly unlikely that an analyst could have made the same adjustment with only the published accounting information available. There was no evidence here of a systematic effect to be analysed.

(e) Pooling: Five of the adjustments mentioned under (d) above were related to the different rules on merger accounting, but it was not found to be a frequently occurring issue of difference.

(f) Dividends: This was not relevant to the exercise carried out here as the profit analysed was that reported before dividend was declared. All companies which had declared, but not paid, a dividend made this adjustment.

(g) Extraordinary items: Thirty companies adjusted the profit in respect of items which had been treated as extraordinary in the UK but non-extraordinary in the US. Many related to disposal of parts of the business. The effect was not uni-directional, involving gains as well as losses. In individual cases the effect could be highly material and is clearly an item to be noted in making adjustments between UK and US GAAP.

(h) Capitalisation of interest: Eight companies adjusted profit for capitalisation of interest. All added back a portion of interest, so that the effect appears to be uni-directional in providing an instance of US profit being less conservative than the UK version. Capitalisation was an adjustment found relatively infrequently in the sample evaluated here, despite being cited in informal discussions with ADR specialists as one of the significant adjustments between UK and US practice.

(i) Oil and gas: Only three oil and gas companies were included in the sample. None made any adjustment specifically related to oil and gas accounting matters.

(j) R & D: Two instances were found of development expenditure being capitalised for UK purposes but expensed under US GAAP.

This list of major categories was found to have covered the most frequently occurring reasons for adjustment, apart from sixteen instances of provision for pension costs. The treatment of pension costs was in a state of transition during the period examined because SFAS 97 was in existence but was not yet mandatory for pension schemes based outside the USA, while SSAP 24 in the UK was also not in full force.

Sweden

Form 20-F reports were obtained for 8 Swedish companies. All of these contained a reconciliation of income and equity under Swedish GAAP with the amounts derived from US GAAP. Table 7 presents the results of the comparison of reported profits under Swedish and US GAAP. It was found that some of the Swedish companies used the net profit after tax and appropriations as the starting point for reconciliation, on the grounds that this is the traditional 'bottom line' for Swedish reporting purposes, while others preferred to take the approach of using the net profit after tax but before appropriations, on the grounds that it gives a more useful indication of performance. Table 7 therefore uses both approaches.

In preparing Table 7, some further calculations had to be carried out because the published reconciliations of income under Swedish and US GAAP present the allocation to reserves and the total provision for deferred taxation as two separate gross amounts. A more useful comparison may be made if the relevant amount of deferred taxation is matched against the allocation. This matching can be estimated from the published note to the accounts which reconciles the standard rate of tax (52%) with the effective rate of tax, which is generally much lower. The note to the accounts includes a separate figure for the tax effect of allocations to reserves. The estimated adjustment

Table 7
Sweden: Income Statements

Total index of conservatism

Under each year:

Column a = Comparison of Swedish net profit after appropriations and tax charge
Column b = Comparison of Swedish net profit before appropriations and after tax charge

Level of materiality	*Index values*	1986		1987		1988	
		a	b	a	b	a	b
Swedish profit 10% or more below the US profit	≤ 0.9000	5	2	5	0	5	3
Swedish profit 5% or more below the US profit but less than 10% below	0.9001–0.9500	0	1	0	2	0	1
Swedish profit within ± 5% of US profit	0.9501–1.0499	0	4	0	3	1	3
Swedish profit 5% or more above the US profit but less than 10% above	1.0500–1.0999	1	0	0	1	0	0
Swedish profit 10% or more above the US profit	≥ 1.1000	2	1	3	2	2	1
		8	8	8	8	8	8
Range: Lowest value		−22.25	−12.63	0.58	0.91	0.48	0.00
Highest value		1.61	1.29	2.65	2.91	1.18	1.19

to calculate the allocation net of tax was carried out for each company in the sample.

The effect of the appropriations is clearly demonstrated as making a material difference to the distribution of index values. Swedish profit reporting appears very conservative after the appropriations are deducted but much less so when the appropriations are left out of the comparison.

Although statistical testing of significance is not possible on this small sample, the calculation of a mean value gives some indication of relative magnitudes:

Adjustments to income:	1986	1987	1988
Total index for Swedish net profit after appropriations and tax	0.92	1.20	0.85
Appropriation net of deferred tax provision	0.11	0.21	0.12
Total index for Swedish net profit after tax but before appropriations, compared with US GAAP	1.03	1.41	0.97

These averages are, unfortunately, inconclusive because they lie either side of the neutral value of 1.0 and because for 1986 and 1988 one outlier in each case had to be omitted to avoid excessive distortion.

The interpretation of the 1986 data is that the Swedish net profit overall was 8% lower than the profit adjusted for US GAAP. The appropriation

was 11% of US reported profit, so that before appropriations the Swedish net profit was 3% higher than that reported under US GAAP. In 1987 the Swedish net profit before appropriations was on average 41% higher than the US profit but in 1988 was 3% lower.

There is insufficient data to carry out any statistical analysis, but Table 8 explains those situations where the overall Swedish profit was more than 10% above or below the comparable US net profit. These extremes have been analysed in some detail in Table 8 because informal discussion with accountants and analysts leaves the impression that they attach considerable weight to these extremes, however infrequently they may occur. The extreme values would also be of interest if they disclosed some consistent pattern which could be of use to analysts.

Taxation differences (loss carryforwards and taxes paid on intercompany transactions) were the most frequent cause for Swedish profit remaining relatively low, even after removing the effects of allocations. Failure to use equity accounting for associated companies was found to be significant in one instance. These are all instances of consistent conservative bias in Swedish accounting practice. Capitalisation of interest as a US requirement was significant in one case.

Other reasons for low Swedish profits are not instances of consistent bias since, depending on circumstances, they could lead to positive or negative adjustments. These were significant in two instances related to accounting for business

Table 8
Sweden: Main causes for extreme differences in reported profit (plus or minus 10% or more):

Overall index value ≤ 0.9

1986: Pharmacia:	A loss of 117 MSEK under Swedish GAAP is reduced to a loss of 8 MSEK under US GAAP, chiefly by adding back an estimated transfer from deferred taxation provision of 75 MSEK and the capitalisation of interest of 33 MSEK. This example represented by far the most significant difference between US and Swedish GAAP. The transfer from deferred tax provision reflects the use of losses carried forward.
Cellulosa:	Amounts added to Swedish net income related principally to the inclusion of a share of profits of associated companies and the capitalisation of interest.
1988: Pharmacia:	A loss of 3 MSEK under Swedish GAAP was changed to a profit of 900 MSEK under US GAAP, due to the combined effects of three relatively large items. An amount of 1,156 MSEK was added to Swedish net income because the method of accounting for business combinations did not follow US GAAP (treatments of pooling of interests and extraordinary write-offs). An estimated amount of 363 MSEK was added back as a result of transfers from deferred taxation provisions, while 636 MSEK was deducted from Swedish net income in respect of sale and leaseback profits which would not be recognised under US GAAP.
Volvo:	A significant amount (6.6% of US net income) was added to Swedish income in respect of a share of profits of associated companies. A further 5.5% was added in respect of different treatments of business combinations (utilisation of tax carryforwards from purchased subsidiaries) plus a foreign exchange loss included in income under Swedish GAAP but excluded under US GAAP under the rules on gains and losses for hedged transactions.
Ericsson:	The most significant addition to Swedish net income related to tax effects on intercompany transactions. Under US GAAP, income taxes paid by the selling company on intercompany profit eliminated in consolidation is eliminated as a prepayment of income tax.

Overall index value ≥ 1.1

1986: Volvo:	There were two significant deductions from Swedish net income. In the first case, a write-down of an investment had been matched with an equal write-up of another investment. US GAAP does not allow the write-up. In the second case there was a foreign exchange gain included in income under Swedish GAAP but excluded under US GAAP under the rules on gains and losses for hedged transactions.
1987: SKF:	An amount taken to income as a result of a sale and leaseback transaction was not allowed under US GAAP.
Gambro:	A business combination which was treated as a pooling of interests for Swedish GAAP was regarded as an acquisition under US GAAP, principally because the two parties were not independent during the two years prior to acquisition. Consequently for 1987 only a portion of income of the subsidiary could be taken to the income statement for US GAAP purposes.
1988: Gambro:	The main cause of difference continued to be the substitution of acquisition accounting methods for pooling of interests.

combinations and in one instance related to currency translation.

Disallowance of some elements of Swedish profits caused income on a US GAAP basis to be lower in other cases. Evidence of a consistent lack of conservatism in Swedish practice, with a potentially significant outcome, was found in the treatment of profits on sale and leaseback transactions, the writing-up of investments to match write-downs elsewhere, and the taking of profit on a pooling of interests which would not qualify as such under US GAAP. The treatment of sale and leaseback would be consistent with an approach which concentrates on legal form rather than economic substance. The investment write-up and less cautious use of pooling of interest

do appear to provide some evidence that Swedish accounting practice is not consistently 'conservative'.

Following Cooke's list of Swedish GAAP practices, cited earlier in this paper, the findings are as follows:

1. Special tax allowances and transfers to untaxed reserves

These were by far the most significant adjustments in the reconciliation of Swedish net profit after appropriations. The magnitude and direction of adjustment in individual cases or in different years is not predictable from the income statement alone, since it also depends on the existing level of the reserve. Out of the 8 companies over the 3 year

Table 9
Sweden: Summary of quantified effect of appropriations to reserves and adjustment of depreciation

Appropriations to reserves
All eight companies adjusted the Swedish reported profit to eliminate, for US GAAP purposes, appropriations to reserves. The table classifies the magnitude and direction of the appropriation as a percentage of US reported profit.

	1986	1987	1988
Swedish profit more than 50% below US profit	3	—	—
Swedish profit more than 30% but less than 50% below US profit	2	2	1
Swedish profit more than 10% but less than 30% below US profit	1	4	3
Swedish profit less than 10% below US profit	—	1	2
Swedish profit less than 10% above US profit	1	—	—
Swedish profit more than 10% but less than 30% above US profit	1	1	1
Swedish profit more than 50% above US profit	—	—	1
	8	8	8

Note: The percentage appropriation is estimated net of tax.

Reduction of depreciation to historical cost basis
Four companies made this adjustment.

	1986	1987	1988
Average index	0.737	0.959	0.979
Range: Low	0.875	0.895	0.961
High	0.994	0.998	0.999

period (24 data items) there were only 6 instances of transfers from reserves to income statement in any particular year (see Table 9 for summary of the effect of allocations).

2. Increased depreciation through revaluation of fixed assets

This was found in four out of the six companies. In terms of the effect of the reduced depreciation charge it was material at the 10% level on only two occasions (see Table 9 for the average and range of index values).

3. Deferred taxation

When the Swedish profit is adjusted for the transfers to untaxed reserves, a provision for deferred taxation is also required in order to satisfy US GAAP. This provision is substantial where the transfer to or from reserves is substantial. As explained earlier, an attempt has been made in this research to isolate the tax effect of the allocations to reserves. Other reasons for making provision for deferred tax include the profit sharing tax, different tax rates in other countries, capital gains and

losses, and the utilisation of tax loss carryforwards. These are generally not material, with the exception in some instances of the tax loss carryforwards. Deferred tax is not recognised in Swedish law or GAAP.

4. Business combinations

There was one case where pooling of interests was not allowed under US GAAP, causing significant deductions from the Swedish profit. In six companies there were adjustments because the US rules on calculation of goodwill and the treatment of items such as tax losses brought forward in subsidiaries are different. It would be extremely difficult to formulate any rule-of-thumb adjustments for such matters because they are highly dependent on the circumstances of each case.

5. Amortisation of goodwill

Under Swedish GAAP, goodwill should be amortised over a period not exceeding 10 years (FAR Accounting Recommendation No 11) and this is done in all cases, so that no further adjustment is made for US GAAP purposes. It does seem

likely that if the companies were reporting primarily for US purposes, they would probably take a period longer than 10 years, so that the adjusted profit for US purposes which is reported in the 20-F is probably still too low in comparison with what might have been reported under US GAAP.

6. Equity accounting

Accounting for associated companies is not dealt with in either Swedish company law or accounting law. There is a variety of accounting practices and differences in the levels of disclosure. Three of the companies did not use equity accounting for Swedish purposes and therefore made an adjustment for US GAAP. Two companies changed to equity accounting during the period and adjusted comparative figures accordingly. In the other three cases associated companies appear to have been immaterial.

7. Foreign currency translation

There is a variety of approaches to problems of foreign currency translation, both in the method of calculation adopted and in the treatment of translation differences. In particular, under Swedish GAAP the gains and losses on translation of long-term loans are taken to the income statement whereas under US GAAP they could be taken to reserves on grounds of hedging. The direction of this effect is not predictable since it depends on relative exchange rate movements.

The Netherlands

In the case of the Netherlands, Form 20-F reports were obtained for 8 Dutch companies. However, two had to be rejected because they had used US GAAP in the financial statements and therefore did not provide a reconciliation with income under Dutch GAAP. In respect of the six companies examined, Table 10 shows that there was considerable variation in the relative conservatism of Dutch reporting. The distribution of

index values for 1988 would lend support to the view that Dutch reporting is at the liberal end of the spectrum (Nobes, 1989), but the distributions for 1986 and 1987 are inconclusive.

Turning to a partial analysis of the components of each total adjustment, Table 11 summarises the main causes for the extremes of differences in profits (plus or minus 10% or more) between Dutch and US GAAP. The only company which reported higher Dutch income in all three years was Philips, using current cost accounting. The reconciliation provided by Philips disclosed only the net effect of current cost accounting so that, although it would appear that the benefit of the gearing adjustment outweighed additional cost of sales and higher depreciation charges, this supposition cannot be confirmed from the information provided. Even when the current cost adjustments were removed, Philips still reported higher profits under Dutch GAAP due to the lack of amortisation of goodwill and other items, including provision for deferred taxation and the non-spreading of investment subsidies received. Income smoothing, rather than relative conservatism as such, appears to be the main factor in accounting for the extreme differences, so that investment gains and losses for an insurance company, foreign currency translation adjustments and the cumulative effect of a change in depreciation policy could all bypass the Dutch income statement but have to appear under US GAAP. Since all these items could potentially take positive or negative values they could not be classed as arising from a consistent desire for greater conservatism in one country or the other and must be interpreted as being consistent with the 'business income' approach of Dutch accounting which would seek to iron out unpredictable distortions in recurring income.

There were, however, some differences between Dutch and US GAAP which had a consistent effect. Revaluation of fixed assets in the balance sheet results in higher depreciation charges and

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Table 10
Netherlands: Income Statements

Total index of conservatism

Level of materiality	Index values	1986	1987	1988
Nl profit 10% or more below the US profit	≤ 0.9000	2	3	0
Nl profit 5% or more below the US profit but less than 10% below	0.9001–0.9500	0	0	0
Nl profit within ± 5% of US profit	0.9501–1.0499	3	2	1
Nl profit 5% or more above the US profit but less than 10% above	1.0500–1.0999	0	0	1
Nl profit 10% or more above the US profit	≥ 1.1000	1	1	4
		6	6	6
Range: Lowest value		0.714	0.581	1.004
Highest value		1.124	1.274	2.416

Table 11
The Netherlands: main causes for extreme differences in reported profit (plus or minus 10% or more):

Overall index value ⩽ 0.9

1986: KLM: An exchange rate difference, favourable at the balance sheet date, is amortised over a time period corresponding to the use of the items giving rise to the difference. Under US GAAP a favourable exchange rate difference would be recognised as income. Hence the 1986 adjusted US profit was materially higher because of the magnitude of the difference arising in that period.

Aegon: In this insurance company, investment gains and losses are taken direct to reserves whereas for US GAAP purposes they must pass through the income statement. In 1986 there was a material investment gain which causes the adjusted US GAAP net income to be higher.

1987: Unilever: The cumulative effect of a change in depreciation policy had to be charged against income for US GAAP purposes.

Aegon: See discussion of investment gains for 1986.

Oce: The company values its fixed assets at the lower of replacement value or value to the business. US GAAP requires valuation at cost and consequently on disposal of a subsidiary there was an additional profit under US GAAP.

Overall index value ⩾ 1.1

1986: Philips: The index value would have been 1.071 after deducting current cost adjustments. This is still relatively high compared with the other Dutch companies, reflecting the full credit to income of government investment subsidies received. Under US GAAP these are spread over 5 years. The index value for 1986 would have been 1.023 if the investment subsidy had been spread as required under US GAAP, this 2.3% excess over US GAAP being accounted for by the non-amortisation of goodwill under Dutch GAAP.

1987: Philips: The index value would have been 1.168 after deducting current cost adjustments. This is high because of the investment subsidy treatment explained above for 1986 (4.3% in 1987), plus a deferred tax adjustment which was 3.4% of US net income and a goodwill amortisation charge which had risen to 7.3% of US income.

1988: Philips: The index value would have been 1.073 after deducting current cost adjustments. The investment subsidy adjustment was now immaterial but the amortisation charge was 7.8% of US income.

Aegon: The total index value of 2.416 was principally due to an investment loss (65.2% of US net income) which had bypassed the Dutch income statement but was included for US GAAP. The high index value is explained further by an amortisation charge (16.1% of US net income) and provision for deferred taxation (12.4% of US net income).

Oce: On disposal of a subsidiary in 1988 there was a substantial translation difference which was taken direct to equity under Dutch GAAP but had to pass through the income statement for US GAAP purposes. Without this material item (53.8% of US net income) the index value for 1988 would have been 0.974, comparable to the value for previous years.

Unilever: There was a translation adjustment of 8.2% of US net income. Without this the index value would have been 1.053, still high due to a goodwill amortisation adjustment amounting to 8.3% of US net income.

therefore lower Dutch profits. Lack of amortisation of goodwill through the income statement results in higher Dutch profits but lower net asset values. All six companies chose to write off goodwill directly against reserves, despite the alternative allowed practice of amortising through the income statement for up to five years. The index values for each of these adjustments are summarised in Table 12.

Dutch accounting shows a more conservative approach than US GAAP in not capitalising interest which would have to be capitalised for US purposes, but the adjustment was found in only one company and was immaterial in effect. Deferred tax adjustments were found in the income statements of three companies, but in all cases there were index values above

and below the neutral value of 1.0. The net effect was that, after making allowance for the material items which caused the extreme differences in net income, the result of the consistent and recurring adjustments was to leave Dutch income within plus or minus 5% of the US GAAP equivalent.

Summary and conclusions

The comparative international accounting literature suggests that generally accepted accounting principles in the US are likely to be more conservative than those in the UK and the Netherlands in terms of their impact on profits. At the same time, US GAAP are likely to be less conservative compared to GAAP in Sweden.

Table 12
**Netherlands summary of quantified effect of amorti-
sation of goodwill and adjustment of depreciation**

Amortisation of goodwill
All six companies reduced the Dutch reported net
income to incorporate goodwill amortisation for
US GAAP purposes.

	1986	1987	1988
Average index	1.024	1.048	1.078
Range: Low	1.000	1.000	1.009
High	1.029	1.077	1.083

They were generally non-specific about the
amortisation period chosen, one quoting the '5–10
years' of Dutch alternative practice, the rest quot-
ing the 'not more than 40 years' US requirement.

Reduction of depreciation to historical cost basis
Three companies made this adjustment but only
two could be distinguished separately (the adjust-
ment by Philips being part of a global current cost
adjustment).

Range: Low	0.938	0.936	0.904
High	0.996	0.996	0.999

This study has attempted to assess the quantitat-
ive impact of these differences on measurement of
profit in practice, so far as companies reporting on
Form 20-F to the SEC in the US are concerned.
There is no doubt that such an assessment is
complex and difficult in view of the fact that some
differences in accounting principles are indetermi-
nate in terms of their bias towards increasing or
reducing measures of profit. Further, the sample
sizes are such that tests of statistical significance
are feasible only in the case of the UK data. In the
case of Sweden and the Netherlands, a case study
approach was necessarily adopted.

Taken overall, the results of this research sup-
port the hypothesis that UK GAAP are signifi-
cantly less conservative than US GAAP in terms of
the impact on profits. Although Swedish GAAP
tend to be more conservative, particularly when the
transfers to reserves are analysed, there is insuffi-
cient evidence to establish a systematically more
conservative bias compared to US GAAP when the
accounting profit before transfers to reserves is
examined. In the Netherlands, on the other hand,
there is some evidence that Dutch GAAP are at the
less conservative end of the spectrum, in a position
similar to that of UK GAAP, but there is insuffi-
cient evidence to establish a systematically less
conservative bias when compared to US GAAP.

Income smoothing may be a stronger motive gov-
erning accounting practice. Since Dutch rules are
flexible, it is possible that the Dutch companies
considered here may have chosen to move towards
US GAAP where this was permissible under Dutch
GAAP. The same conjecture could be applied to
the UK companies investigated here. The extent to
which these companies might be atypical would
require further investigation. It might be connected
to the relative importance which the companies
attach to the figures presented to domestic and to
foreign readers of the annual report.

This research demonstrates that the overall
quantitative impact of differences in accounting
principles on profits in the US, UK, Sweden and
the Netherlands is often significant and, in
individual company cases, may be dramatic. While
some general tendencies have been identified, the
complexity of the analysis is evident. It is clearly
not easy for analysts to develop quantitative 'rules
of thumb' for adjustment of accounts from the
generally accepted accounting principles of one
country to those of another. Further research is
now required to explore the impact of international
accounting differences for a much larger number of
sample companies in a wider variety of countries.

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Appendix

Classification of UK companies analysed, using FT-Actuaries list and list of alpha/beta/gamma stocks

Attwoods	Miscellaneous	b
Barclays	Banks	a
Beazer	Contracting and construction	a
BET	Conglomerate	a
BOC	Chemicals	a
Blue Arrow	Agencies	a
British Airways	Shipping and transport	a
British Gas	Oil and gas	a
British Petroleum	Oil and gas	a
British Steel	Metals and metal forming	a
British Telecom	Telephone networks	a
Cadbury Schweppes	Food manufacturing	a
Cambridge Instruments	Other industrial materials	b
Carlton Communications	(Television industry products)	b
Dixons	Stores	a
English China Clay	Other industrial materials	a
Glaxo	Health and household products	a
Hanson	Conglomerate	a
Huntingdon International Holdings	(Biological testing services)	g
ICI	Chemicals	a
Jaguar	Motors	a
Lep Group	Transport	a
Lex Service	(Distribution; automotive etc)	b
Midland Bank	Banks	a
National Freight Consortium	(Freight transport)	a
National Westminster Bank	Banks	a
Plessey	Electronics	a
Ratners	Stores	a
Reuters	Agencies	a
Rodime	(Computer disk manufacture)	–
Royal Bank of Scotland	Banks	a
Saatchi and Saatchi	Agencies	a
Shell Transport and Trading	Oil and gas	a
Tomkins	Other industrial materials	a
Unilever	Food manufacturing	a
United Newspapers	Packaging and paper	a
Ward White	Stores	b
Waterford Glass	(Crystal and china)	b
WCRS	Agencies	b
Wellcome	Health and household products	a
WPP Group	Agencies	a

Key: ( ) = not included in FT-Actuaries list; a = alpha stock, b = beta stock, g = gamma stock, "–" = infrequently traded shares

Classification of Netherlands companies

Aegon	Insurance
Akzo	Conglomerate
KLM Royal Dutch Airlines	Airline
Oce-Van der Grinten	Copying equipment
Philips	Electrical products
Unilever NV	Oil
Ausimont*	Chemicals
Advanced Semiconductor Materials*	Semiconductor manufacture

*Used US GAAP in their 20-F and therefore did not provide a reconciliation with Dutch GAAP.

Classification of Swedish companies

AB Electrolux   White goods
Gambro Incorporated   Health care products
LM Ericsson Telephone Company   Telecommunications products
Pharmacia Corporation   Health care products
SKF Incorporated   Bearings, tools and components
The Swedish Cellulose Company   Forest and paper products
Swedish Export Credit Corporation   Export finance
Volvo Corporation   Motor vehicles

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Contents

Book Reviews

The Future Shape of Financial Reports. *John Arnold, Paul Boyle, Anthony Carey, Malcolm Cooper and Ken Wild.* The Institute of Chartered Accountants in England and Wales and The Institute of Chartered Accountants of Scotland, 1991. iv + 36 pp. £9.95

This is a Research Report written by members of the Action Group set up by the Research Board/Committee of the Institutes of Chartered Accountants in England and Wales and of Scotland. The Action Group was asked to consider the present state of corporate reporting in the United Kingdom, to recommend reforms which could be implemented reasonably quickly and to identify areas which can benefit from further research. The Report is a prospectus for the development and understanding of corporate annual financial reports. Like its predecessors, the conceptual framework projects, it claims to but does not solve many of the issues relating to its subject matter. Although its effort to make the financial report more purposeful is commendable and innovative, it has increased the stock of unresolved theoretical and pragmatic issues in corporate financial reporting.

After an executive summary, the Report begins with a discussion of the need for reform of the present system of financial reporting which emphasises accountability, historical financial numbers, and a single earnings number. The current system, it is argued, is also inadequate in preferring legal form to the economic substance of transactions and events and is weak in helping users reach decisions about their future relationship with the reporting enterprise (Chapter 1). The Report then examines the needs of external users, who are defined as present and potential investors, creditors, customers and employees (Chapter 2). Chapter 3 provides theoretical arguments for a 'new direction' (described as an 'eclectic approach') for valuing assets and liabilities according to their particular circumstances. On the basis of this new sense of direction, the report suggests a six-part financial reporting package (Chapter 4). Suggestions for future directions are offered in Chapter 5.

The Report concludes that general purpose financial reports should provide information in three key areas: corporate objectives and strategic planning; company wealth measured in current terms; and accountability for corporate performance in the past year matched with the previously published plan for that period (p. 20). The overall aim of the improved financial report, the Report argues, should be 'to provide an accurate presentation of the current position to support a coherent prediction of how it is likely to change in the future' (p. 20). The Report suggests a financial reporting package which consists of six parts (discussed below) dealing with three different time periods: past (statements of income, gains and cash flows), present (a statement of assets and liabilities) and future (statements of objectives and strategic plan and future prospects). The six reports are:

1. *A statement of objectives and related strategic plan.*
2. *A statement of future prospects.* The Report argues that if a company wishes to assure itself of future shareholder loyalty and understanding, it is in its own interest 'to lay out its future plans and prospects as clearly as possible' (p. 7) but without prejudicing confidentiality. This is a potentially difficult balancing act.
3. *A statement of assets and liabilities.* According to the Report, assets and liabilities should be classified either by type or according to the relative certainty of their valuation. On the basis of type, assets should be grouped as tangibles and identified intangibles, and net monetary assets should be disclosed. Retained earnings should be split into trading profits and unrealised gains which should be classified into those arising from tangible and intangible assets. The Report's adoption (p. 22) of Professor Solomons' definition (*Guidelines for Financial Reporting*) of assets as 'resources or rights incontestably controlled by an entity at the accounting date that are expected to yield it future economic benefits' and of liabilities as 'obligations of an entity at the accounting date to make future transfers of assets or services (sometimes uncertain as to timing and amount) to other entities' tends to remove the notion of deferred accounting debits and credits from a statement of assets and liabilities. Deferred accounting debits include losses arising from changes in foreign exchange rates but not prepaid expenses, while deferred accounting credits include deferred tax balance under the deferral method but not income received in advance. The Report also suggests that it would be helpful for management to discuss in financial reports the likely reasons for the difference

between the market capitalisation of their company and the carrying amount of their reported assets and liabilities in this statement.

4. *An income statement.* The Report advocates a statement which distinguishes 'continuing' from 'discontinuing' operations in respect of turnover and income. It does not, however, provide sufficient guidelines on how to distinguish between continuing and discontinuing activities. The Report recommends that the statement should also include analysis of results from unusual trading events and items. The trading income attributable to the company should be shown after deducting financing expenses, attributable taxation and the portion of the residual income due to minority interests. Essentially, it is suggested that this statement should deal with trading results and not with changes in the value of assets and liabilities which should be included in the subsequent gains statement.

5. *A gains statement.* This statement is intended to provide information on whether any change in the reporting entity's wealth arises from trading operations, from changes in the values of tangible or intangible assets, or from prior year adjustments. The statement should also identify how much of the year-on-year change in total net assets is due to 'real' (as opposed to 'inflationary') gains.

6. *A cash flow statement.* The Report states that this statement should follow the format suggested in ED 54, 'Cash flow statements', and preferably adopt the direct method of specifying cash flows from operations.

A further suggestion is made, more tentatively, on segmental information. The Report suggests that financial statements should include information capable of enabling a proper understanding of the complexities of business performance and prospects. Segments may be categorised by manufacturing locations, geographical and product sector of market activity, or by currency medium. This probably implies that the six proposed statements should be in segmental form.

On asset valuation, the Report states that 'the characteristic which determines the value of an asset is its worth to the person who values it' (pp. 14/15) and that 'individual values must be conditioned by the special criteria relevant to the asset in question and by its position in the eyes of the valuer' (p. 15). Convinced that no valuation model is best for all assets and at all times, the Action Group recommends the adoption of an 'eclectic approach' which would allow the use of multiple valuation models for a company's assets and liabilities. As a result, rather than opting for the historical cost or current cost basis of measurement, the Report lends support to some current

UK pragmatic (eclectic) practice. It suggests the adoption of the current market valuation basis for property, normal plant and machinery and investments. For highly specialised tangible assets and intangibles it prefers historical cost, adjusted for changes in the value of money, or where appropriate, current cost or net realisable value. Stocks are to be valued at replacement cost and monetary assets and liabilities should be discounted where appropriate.

Unfortunately, the proposals introduced by this 'blueprint' raise a number of difficult new issues for financial reporting. The classification of tangible assets into 'normal' and 'highly specialised' raises obvious difficulties. The Report's recommendation that 'discounting should be employed in respect of long-term receivables (and payables) which carry a rate of interest significantly different from prevailing rates' will increase the judgemental problems of preparers and auditors. Other new areas requiring judgement include the determination of 'relative certainty' of valuation, the distinction between 'continuing' and 'discontinuing' operations, and the identification of separable intangible assets for valuation.

The Report ends with a list of four areas for further action. The first important requirement is to heighten awareness of the need for change: by the Financial Reporting Council (and by implication, the Accounting Standards Board) and by the government that will ultimately have to introduce some essential legislation. The second need is for experimentation: the changes recommended will become more acceptable if companies (members of the Hundred Group and the CBI, perhaps) are willing to experiment with them on an individual basis. The third area for further action springs from the need to refine the Report's proposals in the light of practical experience gained through experimentation and to strengthen and broaden the proposals' theoretical foundations. The latter requirement specifically points readers to areas of future research which may 'influence the future shape of financial reporting in the UK'. These include: the need to refine the eclectic method of valuation; the level of aggregation of assets and liabilities; the reaction of capital markets to accounting changes; the predictive value for share prices; implications of exposure to risk for existing forms of corporate disclosure; the relationship between cash flow information and longer term share price reactions; and between published accounting information and future cash flows. Finally, the Report suggests that legal (national and European Community) impediments to the implementation of its proposals be studied in order to identify the nature of the changes required to overcome them.

This report confronts many of the thorny reporting issues in an excellent manner. It is, however, worthwhile to examine what it fails to say. The set

of options in the Report is informed by two preceding discussion documents on conceptual frameworks for financial reporting published in the UK which the Action Group was asked to reconcile and improve. The first originates from the Research Committee of The Institute of Chartered Accountants of Scotland (*Making Corporate Reports Valuable*, 1988). The second, by Professor David Solomons, is published by the Research Board of The Institute of Chartered Accountants in England and Wales (*Guidelines for Financial Reporting Standards*, 1989). This initial brief was constraining on the Action Group which would have been better guided by the long shadow of the efforts in the UK to develop a conceptual framework. As a result they have ignored the conclusions and suggestions on social financial reporting in the *Corporate Report* (1975) published by the Accounting Standards Steering Committee.

To its credit, the Report recognises that a purpose of financial reporting is to provide information which may assist the enforcement of contracts, the terms of which include reference to accounting information (p. 4). However, the set of reporting options which may highlight this adjudicatory role in executory contracts, all long-term leases, pension plans, and executive compensation contracts such as profit-related pay, and other contracts dependent on accounting numbers were not addressed by the Action Group. This deliberate omission arises from the Group's primary concern with the provision of information to shareholders, lenders and others to appraise past performance and form judgements on the future of the reporting enterprise.

The report also ignores the need to integrate business economic objectives with those relating to its social responsibility. The tenets of social capitalism require that business pursue its basic objectives with the consent of society; hence, it is obliged to advance the interests of society and serve its needs. This requires new frameworks for corporate reporting to provide for the disclosure by companies of how they contribute to the quality of working and environmental life. Society not only depends on companies for good economic results and responsibility as corporate citizens but also expects to read about their economic and social attainments. Profit-seeking enterprises and government have both experienced pressure from environmentalists, consumer protectionists, human rights proponents and unions to the effect that social/national goals must not be relegated to a status subordinate to economic goals.

The focus of the Report is regrettably limited to profit-seeking enterprises. But users are also interested in financial reporting by non-profit-seeking organisations. A study concerned with the future shape of financial reports should also consider the implications for corporate reporting of publicly owned enterprises recently privatised with a broader mandate to operate in the public interest.

Notwithstanding what it fails to say, the Report deals with its subject in a professional, innovative and articulate manner and is essential reading for anyone interested in the future of financial reporting in the UK whether as a user, standard-setter, preparer, auditor, lecturer or student.

University of Exeter   R. S. Olusegun Wallace
                                                  and Will Unwin

Firm Foundations: The Development of Professional Accounting in Scotland, 1850–1900. *Moyra J. M. Kedslie.* Hull University Press, 1990. xix + 335 pp. £22.50.

This book tells the story of the three Scottish chartered bodies (Edinburgh, Glasgow and Aberdeen), now united. All were formed well before their English counterparts—the Edinburgh and Glasgow societies in the mid-eighteen fifties and Aberdeen a decade later. The original Edinburgh members were closely connected with the law (especially bankruptcy work) whereas the Glasgow members had stronger links with actuaries and stockbrokers, while many of the Aberdonians were employed by banks, railways and other companies.

The author has gone to great pains to give us a minutely detailed description of the early accountants and their environment. She tells us—with many tables and graphs—about their social status, the occupations of their fathers and grandfathers, how they were educated (from the start, a strong bias against degrees), and where they emigrated to. She tells too of the many Acts and proposed Acts that governed companies, railways, banks, insurance offices, local government, and other bodies that gave employ to accountants and auditors. She suggests that the railways' clearing house did much to standardise accounting and give it its modern form; and she quotes an 1850 writer on 'the insolent and costly arrogance creeping in amongst accountants .... [who are] becoming the lords and dictators of the whole railway interest'. As the detailed circumstances of each of the three societies are described in sequence, inevitably the book tends to seem somewhat repetitive.

From an early date, the societies stressed the importance of education. They organised evening classes in bookkeeping for their apprentices, and required these to attend the Scots Law class at the local university. At first the examinations were oral and not very formal; a member admitted in 1878 tells us that:

one day when my indenture was at an end I dressed myself in a frock coat and silk hat and presented myself before the members of the

council. They all shook me by the hand and said they were sure I would be a credit to the profession, and that is how I became a chartered accountant.

Later the examinations were written, and a joint examinations board was set up in 1893.

The three bodies went to some pains in their efforts to win a monopoly for themselves. Thus they opposed the granting of a charter to a rival body that did not insist on apprenticeship, and they tried to stop English CAs from calling themselves 'chartered accountants' if they worked in Scotland.

The effects of Britain's caste system on accounting would be an interesting field of study. Needless to say, the Edinburgh members were socially superior to the members of the other bodies (though inferior to lawyers). They lived in the New Town, with from three to ten servants. They kept their exclusive status by charging new apprentices a hundred guineas, and limiting their number to two per partner. Presumably a lad without the right social links found it hard to gain a place. I remember G. O. May (who went to America in the nineties and became senior partner in the New York office of Price Waterhouse) telling me that many bright British boys were debarred by their social class from the better professions and became accountants, whereas in democratic USA all careers were open to bright boys and accounting was left to the less bright—with the result that British accounting was superior to American.

A researcher might also spend some time looking at the portraits of past presidents in the Institute office. Until about twenty years ago, these men are uniformly aloof, gloomy, and clearly of unblemished character. Later, every one is smiling, human, and not incapable of peccadillos. Here surely is scope for sociological study.

The trouble with all books on accounting history is that, while a conscientious author can find plenty of material on 'external' matters (e.g. the societies' minutes and bankruptcy statistics), it is remarkably hard to find out about the 'internal' matter of life within the office. This must lead to misconceptions. For instance, *Firm Foundations* dismisses the account charge and discharge as a mere appendage of estate factors that concealed 'his real financial situation from the owner'. I became an apprentice in 1924 in one of the oldest Edinburgh offices, and my memory is that the account charge and discharge was one of the firm's mainstays. The firm did some company auditing and managed investment trusts, but it also had a long range of miscellaneous activities that combined well with the account C and D, e.g. we ran judicial factories, we prepared and audited trust accounts, we collected feu duties, and I had to give £4 a quarter to tragic 'incurables'. We apprentices spent much of our time on high stools at sloping desks, playing some surreptitious bridge, but also drafting accounts C and D. Each page had to be done in impeccable style, and then ruled in both blue and red ink; the slightest mistake meant that the page had to be done again. Every voucher was neatly folded, 'backed', and numbered. With luck, one could draft four pages a day. These splendid documents had come to be no more than copy for the typists, so such careful preparation was a gross waste of time; but our labour cost the firm nothing, as our pay consisted merely of the return of our hundred guinea fees.

The account C and D has a long and worthy history (it must have come from the medieval practice of charging an illiterate agent by putting counters on a checker board, and discharging him by flicking them off again). It satisfies the very natural desire for a statement of cash flows. In testamentary trusts, it serves as a careful analysis of the rights of life-renter and ultimate beneficiary; so accountants trained on such fare must have acquired clear ideas on capital and revenue—ideas that they no doubt would later superimpose on commercial accounting. In any of our histories, the account C and D merits a place of honour.

London School of Economics   W. T. Baxter

Comparative International Accounting. *Christopher Nobes and Robert Parker* (eds). Prentice-Hall International, 3rd ed., 1991. £19.95.

The third edition of this text is most welcome for those who teach courses in international accounting. The previous edition was published six years ago and a number of developments have occurred since then. In addition, the other competing international accounting texts are out of date, and their revisions are still in progress. Thus, at the moment, this book is the only up to date one on the market designed for a stand alone international accounting course. The third edition updates most of the chapters in the second edition and it incorporates the chapters in *Issues in Multinational Accounting*, also by Nobes & Parker and published in 1988. (The chapters from the latter are mostly without revision.) Therefore, even though the book is still called *Comparative International Accounting*, it is now really more than that. It is a more comprehensive international accounting text.

The book is intended to be used in upper division undergraduate or in postgraduate courses. In my view, students in these courses should already have a strong background in accounting. Though written from a British perspective, it is equally usable in, say, a US university. For example, I have taught out of the second edition several times, and it has worked very well. It is also reasonably priced

($37.50 in the USA), which will add to the book's appeal. However, end of chapter materials, such as discussion questions and cases, are missing. These are typically included in American textbooks and so, at least from this side of the Atlantic, these omissions would be viewed negatively. Instructors needing these will have to look elsewhere, a nuisance particularly for someone developing an international accounting course from scratch.

The book is divided into four parts. Part I is called the 'context of international accounting' and includes chapters on the causes of international accounting differences (Chapter 1), what the major differences are (Chapter 2), classifications of accounting systems (Chapter 3), accounting regulation in the United States, United Kindom, Australia and Canada (Chapter 4), and international harmonisation (Chapter 5). Part II consists of the country studies, specifically, chapters on financial reporting in North America (Chapter 6), the United Kingdom and Australia (Chapter 7), France (Chapter 8), Germany (Chapter 9), The Netherlands (Chapter 10), Japan (Chapter 11), and developing countries (Chapter 12). Part III deals with selected technical issues. These are consolidations (Chapter 13), foreign currency translation (Chapter 14), segmental reporting (Chapter 15), inflation accounting (Chapter 16), and international financial statement analysis (Chapter 17). Finally, Part IV focuses on multinationals and financial controls. Chapter 18 is about the nature and growth of multinationals, Chapter 19 is on foreign exchange risk management, Chapter 20 is about income taxes, and Chapter 21 covers transfer pricing.

The in-depth country studies, specifically Chapters 6 through 11, are what make the book distinctive from other international accounting texts. These chapters, along with Chapters 1 and 2 (from *Issues*) and Chapter 3, are the strength of the book and they provide a very thorough sense of the important comparative aspects of financial reporting in the developed world. An instructor adopting this book should, therefore, want a course with a strong country and comparative focus.

As noted above, the chapters brought in from *Issues* are mostly unchanged from that book. Perhaps not much has changed since *Issues* came out, but it still seems that at least some more current illustrative examples could have been used in the third edition. For example, Chapter 17 has an illustration from the 1986 Volvo annual report, while Chapter 18 has macroeconomic statistical data through 1983. This information is not too old for a book coming out in 1988, but is a bit old now. However, this a minor point. Also, the transfer pricing chapter (from *Issues*) relies on seemingly dated information and could incorporate newer literature. More difficult to explain is why some of the chapters from the second edition of *Comparative*

have hardly been touched: Chapter 3 on classifying reporting practices is only slightly modified. Admittedly, there has been very little new empirical work since the second edition. However, the 1980s witnessed a significant internationalisation of capital markets and harmonisation within the European Community, suggesting that some new clusterings reflecting these events might have occurred. Professor Nobes, the author of this chapter, is probably the leading authority on accounting classification and so no doubt has insights (or at least speculations) to offer. Chapter 11 on financial reporting in Japan has hardly been changed at all. If there have been few accounting developments in Japan in the meantime, then it would have been helpful if the author had said so. Chapter 12 on accounting and economic development seemed dated to me even in the second edition and it is identical in the third edition, with the exception that an appendix on accounting in the People's Republic of China has been added. Chapter 19 on foreign exchange risk management is also verbatim from the second edition. It would seem that with all of the new financial instruments as well as the increased globalisation of financial markets, there is something new to be said here. In other cases, the slight modifications are no doubt due to the fact that nothing much has changed since the second edition. There are only slight modifications to Chapter 14 on foreign currency translation and Chapter 16 on inflation accounting. Regarding the latter, there were two rather significant events on the inflation accounting scene in the late 1980s. These were Israel's adoption of general price level (current purchasing power) accounting and the issuance of International Accounting Standard 29 on accounting in hyperinflationary countries. Accountants from South America and Israel were instrumental in developing IAS 29. It would seem that these events deserve more than the cursory mention that they get in Chapter 16. Finally, it is perhaps inevitable that a book of this scope will have an occasional error, such as the quotation of the standard two paragraph US auditor's report in Chapter 6, which was replaced with a three-paragraph report effective 1989.

I have a few suggestions for the fourth edition, though these are obviously a matter of personal preference. There are a few topics that I like to cover in my international accounting course which are not in the text. Including chapters on them would, I believe, add to its appeal. The first is transnational financial reporting, especially as it relates to companies raising capital internationally. Some related points are in Chapter 17 on financial analysis, but looking at the issues from the perspective of companies providing the information (as opposed to the analyst using it) would supplement and support Chapter 17. This would also complement the country studies, since many companies go

beyond their domestic reporting requirements when reporting internationally. The second topic is social and nonfinancial reporting, including 'green' accounting. Since this is mostly a European development, American students are rather intrigued by what for them is an unfamiliar topic. Finally, the managerial portion of the book would benefit by adding a chapter on performance evaluation and control. I believe that Chapter 18 on multinational enterprises can be safely removed, since it is not linked to the other chapters, nor does it draw out any accounting implications. Finally, the discussion of consolidations in Japan should be put in Chapter 13 along with the discussions of the other major countries that the book focuses on. Again, these are my own personal preferences and others would no doubt disagree.

Comparative International Accounting has a distinct niche among international accounting texts. Those who liked the first and second editions will no doubt like this one. It is for a particular kind of international accounting course—one that emphasises a strong country and comparative focus. However, the third edition should have broader appeal than the earlier ones, since the inclusion of the chapters from *Issues* makes it more complete. A few of the chapters from the second edition are essentially unchanged in the third. In some cases, these are on topics where little has happened since the second edition. However, in a few cases, the minimal revisions are harder to explain. Here the instructor will need to supplement the chapters with some current readings. Overall, this is a very fine international accounting textbook and I recommend its usage.

Oklahoma State University   Gary K. Meek

Auditing: Theory and Practice. *John Dunn.* Prentice-Hall, 1991, xv + 267 pp. £15.95.

It is claimed in the preface that this book is 'a compromise between the books which are devoted exclusively to the theory of auditing and those which are rooted entirely in practice. It is intended to form the core text for students studying auditing as part of a degree course in accountancy'. It is also hoped that the text will provide 'a link between the theory and practice of auditing in a manner which demonstrates that academic research can, and does, have implications for the practitioner'.

In the furtherance of these objectives the author has written a text with four sections and a total of sixteen short chapters. The first section, on the regulatory framework of auditing, includes four chapters entitled: why have an audit?; auditor independence; the auditor's duties; and international comparisons. The second section, audit reporting, contains two chapters: the audit report; and

qualified audit reports. The third section comprises eight chapters: the conduct of an audit; audit evidence and testing; internal control; computer audit; audit sampling; the sales cycle; the purchases cycle; and audit of the balance sheet. The final section, auditing as a service to management, has two chapters: internal audit; and management audit. Each chapter contains, on average, thirteen pages of text plus a summary, notes, questions and case studies.

The author is correct to argue that the book is appropriate for undergraduate courses, for it is certainly inadequate for professional examinations, containing, as it does, too much theory and too little practice for their needs. It is by no means certain, however, whether it is suitable as the set text for an undergraduate course. Its strengths are its breadth of coverage and the comprehensive notes to the text; its weaknesses are also twofold: the lack of a critical approach and the superficiality of the analysis of several important areas. For example, agency theory is dealt with in one and a half pages, with no reference to the substantial body of literature which questions the application of that theory to external audit; nor is any consideration given to alternative approaches to external audit. The possibility of different styles of corporate governance, such as worker representation, shareholder representation, supervisory boards, etc., receives scant attention, as does social audit, which warrants half a page.

The superficiality of the theoretical material is demonstrated in the reference to the 1977 paper by Briston and Perks, discussed on page 9. It is stated that in this paper it was estimated that the total amount spent on audits in 1976 was £109.7 m and that the authors proposed to abolish the requirement for an external audit. Clearly the author has relied upon secondary sources for his reference to this paper. Had he read it, he would have found that total audit fees for the corporate private sector were estimated at £250 m. and that the authors recommended that compulsory audit should be withdrawn from unlisted companies, while listed companies might be audited in a more independent fashon either by means of a state audit board, possibly on a random basis, or by strengthening the internal audit function through the creation of a supervisory board.

On the other hand, the text has the advantages of having a broad coverage and of being up to date, and so long as students are prepared to read the supplementary material referenced in the notes and the lecturer is prepared to provide the critical observations which are inevitably lacking, given the brevity of the text, then this could be a reasonable starting point for an undergraduate course in auditing.

University of Hull   Richard Briston

Consolidation Accounting. *R. Ma, R. H. Parker and G. Whittred.* Longman Cheshire, 1991. xiv + 271 pp. A$26.99.

The downtrodden lecturer in financial accounting will read this book with a degree of enjoyment rarely experienced with undergraduate textbooks. Chapters generally contain a balance of theoretical insight, practical exposition and reference to empirical research reflecting the teaching skill and scholarship of its authors. Written by a highly distinguished team of Australian and UK academics, the text is aimed unambiguously at the Australian undergraduate market. It has developed from an earlier book, *Consolidation Accounting in Australia: Concepts and Practice* by Ma and Parker.

Although not explicitly divided, the book has three parts. Chapters 1 to 4 set the scene, chapters 5 to 9 cover the main technical area of traditional consolidation methods; and chapters 10 to 12 cover current issues in group accounting. Chapters 1 to 4 deal with the history of group accounting in the United States, the United Kingdom and Australia, the insight that empirical research provides on the use made of consolidated financial statements, and concepts underpinning consolidation methods. Refreshingly this is probably the most interesting part of the book and is clearly not regarded by the authors as merely a necessary preamble before getting into the meat of consolidation accounting techniques.

Whilst the 'history' chapter contains a welter of interesting information on the background to group accounting in the three countries featured, it is less comprehensive when discussing the background to current practice in the United States. A welcome feature of a text book on consolidation is a chapter devoted to empirical academic research. This chapter takes the form of a four page introduction followed by summary and comments on four research studies, three Australian and one US. Two of the studies look at the use of consolidated statements by bank lending officers and two put consolidated statements in a 'financial contracting' context. From a pedagogic standpoint, the 'gem' of the book is chapter 4 on 'Consolidation Concepts'. Rarely have I come across such a clear, succinct and logical statement of the basic premises that underpin the choice of consolidated accounting method.

The middle, techniques, section of the book accounts for three fifths of the overall length. The structure of this part follows the traditional pattern, instructing by means of numerical example and introducing progressively more complex situations. This part of the text provides clear evidence of having been thoroughly class-room tested. The examples are mostly stripped of unnecessary bulk and kept to a degree of detail that could be presented in a lecture situation. The book makes use of the consolidation worksheet with an added refinement of a separate column for 'outside equity interest' (minority interest). Teachers of group accounting are in the main divided between those who favour the worksheet approach and those who favour ledger accounts. I personally have found disadvantages to both approaches. This book provides detailed journal adjustments for all examples and hence can easily be understood by a student instructed by a lecturer of either persuasion.

There are separate chapters on 'Consolidated Fund Statements' and 'Equity Accounting and Associated Companies'. The former builds on an assumed knowledge of basic funds flow technique, identifying particular additional problems in the group situation. The latter explains equity accounting as an extension of the acquisition accounting method. Both chapters contain critical discussion of the techniques from the standpoint of logical consistency and decision usefulness, drawing on recent research material. The final chapters cover joint arrangements and proportional consolidation; segment reporting; and foreign currency translation.

Throughout the book much care and attention has been given to the end of chapter material. Reading lists are well balanced and for the most part up to date. Of particular note is the imaginative way newspaper cuttings have been used as the basis of end of chapter discussion questions.

This book is clearly a textbook of the highest standard but it has some omissions. Look as one may, a reader will find little coverage of the use of the 'merger' or 'pooling of interest' consolidation method. The reason given on page 70 is: 'In Australia ASRB 1015 and AAS 21 prohibit the use of the merger or pooling of interest method, . . For this reason the . . . method is not further discussed in this text.' This would appear to be a fairly weak excuse in a text which includes the exploration of ideas.

The reader is entitled to be a little disappointed at the lack of a chapter drawing conclusions. The subject matter of this volume has an academic unity and it is not unreasonable to expect the authors to bring the threads of the different chapters together at the end, perhaps pointing the way into the future.

As indicated earlier, this book has clearly been put in an Australian institutional setting and cannot be considered as a principal course text at a UK or North American university or college. Considerable emphasis is given to the presentation of group accounting statements and the Australian form of vertical balance sheet is used throughout. In addition to the light treatment of the merger accounting method, amongst the other 'omissions' from a UK perspective is a

detailed treatment of the significance of the Seventh Directive and of the practical implications of merger relief.

This is not to say that it should not be on undergraduate reading lists. The enthusiastic final year student is likely to gain considerable benefit from the mixture of comparative analysis of national accounting standards, normative theory and references to empirical research findings that are to be found in most chapters. In terms of books aimed at the UK market and which UK academics are likely to be familiar with, this text can perhaps most directly be compared with *Consolidated Financial Statements* by Paul Taylor. Both books clearly show that consolidated accounting can be presented in a way that justifies its inclusion for study at some depth within the undergraduate programme.

This book should be on the shelf of the financial accounting specialist and available to undergraduate and postgraduate students through college libraries as a highly recommended item of additional reading on advanced financial accounting courses.

University of Glasgow   Paul D. Gordon

Basic Financial Management. *J. D. Martin, J. W. Petty, A. J. Keown and D. F. Scott Jnr.* Prentice-Hall International, 5th. ed. 1991. xxiii + 952 pp. £20.95.

I must confess an admiration for authors who are prepared to write such lengthy 'tomes' on financial management (the present text under review extends to nearly one thousand pages). This admiration is often tinged with the question 'why?', when so many other texts are available. As this is the fifth edition of the text, the publishers have presumably done their sums and found this to be an effective competitor.

The text reflects the style which seems to be the accepted 'post Brealey & Myers/Ross & Wester-fields' style. The presentation and general layout are all very user friendly. The text is particularly suited to the US MBA, containing large numbers of aide-memoires, self-study questions, etc. The authors indicate that the text is appropriate for an extended introductory course in financial management. I have no reservations regarding this claim, other than that the material is *very* extensive for such a course. However, in its favour, virtually all topics etc that may be conceivably taught at such a level are covered in the text. From a UK perspective the text is inevitably, however, excessively oriented towards the US. My personal preference would be to use a UK introductory text and link in with Brealey & Myers later on. The actual content coverage is satisfactory and not overly demanding on the novice student (e.g. very little of

the 'derivative type' flavour of financial management is presented). In summary, a sound text, perhaps more appropriate for US than UK MBA programmes.

University of Birmingham   Mike Theobald

Interpreting European Financial Statements—Towards 1992. Christopher Nobes. Butterworth, 1989. x + 182 pp. £50.

This book is a companion volume to Christopher Nobes' earlier book on US financial reporting, *Interpreting US Financial Statements* (Butterworth, 1988). That book was written from the perspective of an outsider who wishes to come to terms with US accounting practices when analysing the financial statements of US companies. The present volume on Europe is not quite the same. It offers an overview of accounting in Western Europe that would be as useful to Europeans as to those looking at us from outside.

In the US, with its 250 million people living within a fairly unified commercial environment, it is possible to talk about 'generally accepted accounting principles'. In the EC, with its 325 million, we are not able to do so. Diversity is still the hallmark of European accounting, both in terms of financial reporting practices and accounting regulation. The EC directives barely scratch the surface. Chris Nobes has taken on quite a challenge with this book.

He resolves it by drawing together the European dimension, then by indicating some inter-country differences in accounting method, and finally by taking the reader into some of the areas of conceptual divergence. In chapter 1, he succeeds in his aim of providing a synthesis of European accounting. I found this to be a very neat summary of the evolution of accounting in Europe—not comprehensive, because that is not the aim of the book, but a good starting point for a student new to international accounting.

The second chapter, European Differences in Financial Reporting, is concerned with fairness, conservatism, provisions, valuation bases, consolidation, uniformity and shareholder orientation. Here, I find that the concise explanations do not take the reader into sufficient depth to allow a meaningful analysis of a set of financial statements. The coverage points the reader in the appropriate direction, and the chapter suggests which key areas to look into, but it does not and cannot act as a comprehensive guide. Perhaps that is the publisher's problem in stating that the book 'will guide financial managers and auditors of multinational companies as well as international analysts, investors and lenders, expertly through all the complexities of the subject'.

There are informative chapters on the EC harmonisation programme and the publication and audit of accounts in various European countries, the latter including some examples of the linguistic problems of financial reporting in different languages. A small glossary in English, French, Spanish and German is included as an appendix.

The final chapters (6, 7 and 8) are well thought out. They deal with concepts but without demanding too much of a reader who is unaware of the institutional contexts of European accounting. In these chapters, there are useful illustrations of the different approaches to asset valuation and earnings calculation and of differences in the concept of the entity that are found in various European countries. Once again, these chapters do not provide the outsider with a comprehensive guide to the diversity of European accounting. Rather, the many useful illustrations of divergent concepts and methods allow the reader to formulate an investigative approach to interpreting European financial statements. This involves seeking explanations in the differing structures and social conventions of the various European societies, rather than assuming that accounting differences are a historical relic in the newly-harmonised Europe.

UCNW, Bangor   Stuart McLeay

VAT Case Digest. UK & Community Law. *Ernest Hoskin.* Sweet & Maxwell, 1991. £90

In terms of printing and presentation this book is a quality production as one would expect from these publishers. It is a loose leaf publication to enable service material and updating to be inserted as required, and most practitioners will welcome this. Taxation seems to be in a permanent state of change, so bound volumes quickly go out of date and a loose leaf insertion service is the only practical method of dealing with the situation.

There are seven divisions separated by plasticised tags, dealing with: VAT cases heard in the UK by courts and tribunals, cases heard by the European Court, appeals to the European Court of Justice, VAT cases heard outside the UK, non-VAT cases which are relevant to VAT, tables of cases etc., an index and a service section.

Ernest Hoskin is a well known author and lecturer and an accepted authority on VAT matters. One of his outstanding gifts is the ability to explain complex matters in a clear and lucid manner, and this publication will only add to his reputation in this respect. Anyone who has had to plough through the reported European cases will know only too well the frustration of trying to make sense of the civil service verbiage of community language, with all its complex system of technical references; but here is a book which will be greeted with relief and heartfelt thanks.

Hoskin's recital of the facts, the relevant statutory references, and a summary of the decision in respect of each case with his comment thereon is a model of clarity for other textbook authors to follow. It is not too much to say that here is a source of intellectual pleasure and enjoyment which is a super bonus to the very high standard of the professional contents. There is no reason why technical and legal matters should not be put into aesthetically pleasing language, and Hoskin demonstrates how it should be done.

Because the matters adjudicated upon are necessarily the more obtuse and uncertain parts of the statutes and regulations, it is possible this publication will be of more practical use to lawyers who are likely to be called upon to give advice to clients with VAT problems than to, say, accountants, who would not ordinarily be competent to give a legal opinion. Nevertheless, all practitioners will benefit from having this book in their library, because it will speedily give clear guidance as to how certain statutory provisions are likely to be interpreted by the courts.

Lawyers too will benefit from the legal maxims quoted which may not always be useful to others. Ask your friendly accountant if he knows the meaning of *stare decisis et non quieta movere*, for example!

The index is a bit thin. Only seven pages for so vast a coverage seems inadequate. On the other hand the table of cases is well referenced, and that division also includes tables of UK statutes, European statutes, statutory instruments, Treaty of Rome and European Community directives references.

So far as can be ascertained this book has no equal in any comparable publication. For that reason alone it will meet a need of practitioners.

That it is written by Ernest Hoskin is a virtual guarantee that it is good, and purchasers will not be disappointed.

University of Exeter   Gordon Channon

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The Institute of Chartered Accountants
in England and Wales

Incorporated by Royal Charter, 11 May 1880

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General

Papers should be as brief as possible consistent with the journal's objective (see reverse of Contents page). They should be typed and double-spaced. *Three* copies should be submitted together with, in the case of non-subscribers only, a submission fee of £25 or US$45. In order to ensure an anonymous review, authors should not identify themselves directly or indirectly. Experience has shown that papers which have already benefited from critical comment from colleagues at seminars or at conferences have a much better chance of acceptance.

Presentation

A cover page should show the title of the paper, the author's name, title and affiliation, and any acknowledgements. The title of the paper, but not the author's name, should appear on the first page of the text. An Abstract of 150–250 words should be provided on a separate page immediately preceding the text.

Tables and figures

Each table and figure should bear a number and a title and should be referred to in the text. Sources should be clearly stated.

Footnotes

Footnotes should be used only in order to avoid interrupting the continuity of the text and should not be used to excess. They should be numbered consecutively throughout the manuscript with superscript arabic numerals. They should not be used in book reviews.

References

References should be listed at the end of the paper and referred to in the text as, for example, (Zeff, 1980, p. 24). Wherever appropriate, the reference should include a page or chapter number. Only works cited in the paper should be included in the list. Citations to institutional works should if possible employ acronyms or short titles. If an author's name is mentioned in the text it need not be repeated in the citation, e.g. 'Whittington (1986, p. 6) states . . .'

In the list of references titles of journals should omit an initial 'The' but should not otherwise be abbreviated. The entries should be arranged in alphabetical order by surname of the first author. Multiple works by the same author should be listed in chronological order of publication. Some examples are:

Accounting Standards Steering Committee (1975), *The Corporate Report*.
Ashton, D. J. (1986), 'Goal Programming and Intelligent Financial Simulation Models, Part 2', *Accounting and Business Research*, Spring.
Watts, R. L. and Zimmerman, J. L. (1986), *Positive Accounting Theory* (Englewood Cliffs, NJ: Prentice-Hall).

Style and spelling

Abbreviations should be written as, for example, FASB and not F.A.S.B. Words such as 'realise' should be spelt with an 's' not a 'z'. Single quotations marks should be used, not double.

Mathematical notation

Mathematical notation should be used only where its rigour and precision are indispensable, and authors should explain in narrative form the principal operations performed. Such notation should be avoided in footnotes. Equations should be numbered in parentheses, flush with the right-hand margin.